

**DEPARTMENT OF TRANSPORTATION**  
**Departmental Energy Primer**



**Developed by**  
**Division of Business, Facilities, Asset Management and Security**  
**Caltrans Energy Conservation Program**

# Departmental Energy Primer

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# Departmental Energy Primer

## Goal:

This “Primer” discusses in general terms and the “how, when, where, and why” of energy use by the Department, and to promote a better understanding of why the Department’s energy conservation team members need everyone’s support in this effort.

Every employee is to be considered a member of the Department’s Energy Team.

## Overview:

This document begins with a discussion of terms and definitions. Followed by a brief history of the Department’s energy conservation milestones. Then the discussion will move to the where/what/how’s of conservation theory as it applies to the Department’s energy consuming equipment/systems. Documentation and tracking energy use and savings is discussed at the local level and its integration into a statewide macro overview.

The last section of the “Primer” examines the Department’s consumption patterns/profiles during summer and winter, on weekdays and weekends/holidays. Snapshot profiles during 1996, 2000, and a forecasted 200x will demonstrate how and where the Department is making progress with its energy conservation implementation program. The last charts in this section will then overlay 1996 and 2000x grid load profiles. As an additional bonus, a fourth profile set will demonstrate the statewide load profile of the Department with full implementation of project 5b (on-site total power generation).

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*(Please note, vehicle energy conservation is not discussed at this time, although many of the conservation concepts may be applied to their use and operation.)*

## Terms and Definitions:

The definitions in this section do not reflect the strict “Dictionary” explanation for the term. The definitions try to keep the terminology and concepts as basic as possible. If the reader wishes greater detail, additional information is available upon request.

Amp	<p>Is a unit of measurement assigned to the flow rate of electricity through an electrical circuit. The “Amp” rating found on a product’s label defines the flow rate at which the piece of equipment consumes electricity as stated by its manufacturer. Meters that can monitor the amp draw off a device during its real-time operation may also determine amp data. Actual operational data is more useful when trying to determine savings potential for any conservation measure.</p>
Baseline	<p>Is the term used by conservation auditors that define the operational conditions of any device or system prior to any modification. The baseline conditions are used to calculate the impact of proposed conservation modifications, and then again used to verify the design assumptions in a post-implementation study. Establishment of baseline operational data and its use in documenting savings potentials is required before any conservation measure may be approved for funding by State Government.</p>
Control	<p>Is a generic name given to any device that can vary the flow of energy to consuming device(s) (on or off or somewhere in between, i.e., like a dining room light fixture dimmer switch). Controls can be hand operated or automated in some manner.</p> <p>All powered equipment and systems require some form of control, even if it is only an on/off switch.</p>
Cycles per second (cps, frequency, Hertz or Hz)	<p>An electrical term that describes how often alternating current (AC) flip/flops plus and minus orientation within a single second of time. In North America, the default frequency for AC electricity is 60 cps or Hz (Hertz); whereas in Europe and most of the rest of the world, AC electricity frequency is set at 50 Hz. That’s why you need to take power adapters with you whenever you travel outside of North America. Many devices can operate at either 60 or 50 Hz with a simple flip of a switch or a change in connections, while some equipment may require an added adapter.</p> <p>Direct current (DC) does not alternate polarity (plus/minus poles). Batteries and photovoltaic panels are good sources of DC power.</p> <p>AC power sources can be converted to DC power by using an electrical device called a rectifier or (on a smaller scale) a diode.</p>
Data	<p>We are not talking about a certain android that goes by that name; however, we are talking about collected information about energy consuming equipment, devices, or systems. This information may include data from equipment label(s), actual monitoring of equipment when in operation, or from manufacturer’s supplied product informational material.</p> <p>Operational data for any energy system should be collected prior to any modification to that system. Doing so allows for the establishment of a baseline operational profile of a device, system,</p>

	<p>facility, or statewide conservation measure.</p>
Demand	<p>Is an energy industry term that describes the maximum rate of electricity an electrical account will consume from the utility's power lines. The electrical utility is required to have enough capacity in its wire based distribution system to meet the reader's needs along with everyone else's needs who are also connected to the same set of wires. If too many accounts are added to the line, and the line cannot meet the total demand of those clients (like on a really hot day), circuit breakers at the local transformer or sub-station will "Trip-off" and there will be a localized power outage. If some of the safety devices fail to trip-off, then the stress to the system increases and the size of the power outage increases, at times this outage situation can spread beyond the boundaries of a state.</p> <p>Currently the State of California has established rules that monitor statewide demand levels, and then orders local utilities to turn off customers in a controlled way so that a statewide loss of power does not occur. The 2000/2001 rolling blackouts are an example of how this system works.</p> <p>Electric utilities are allowed to charge larger customers "Demand" fees/charges in addition to the regular kilowatt-hour charges every electric utility customer pays. Depending upon the size of the facility's demand, the utility may apply different fee structures. Typically, utilities look at how customers use energy during the highest system demand period (called "peak demand period" i.e., between 11 am and 8 pm in the Summer months); lowest system demand period (called "off-peak demand" i.e., between 11pm and 6 am); and whatever is left over (called "mid-peak demand" in this example that would be between 8 and 11 p.m., and 6 and 11 am.).</p>
Demand (Continued)	<p>The fee structure may change between winter and summer usage. The cost to supply power and maintain the distribution system helps to set the level of the demand fees.</p> <p>Determining the demand profile of a large facility requires the ability to monitor the rate of power coming into the facility at the electric meter. Measuring this data source only tells you how much energy you are using at any point in time. This information will not tell you where you are using the energy and when, just the aggregate for that power circuit.</p> <p>Many departmental facilities have more than one electric meter. Demand fees may vary between those accounts.</p> <p>Conservation measures that control the level of a facility's demand may not save kilowatt-hours; however, utility savings will occur if the metered account can move or defer the rate of consumption outside of the High-Peak period.</p> <p>This type of conservation measure is known as "demand</p>

	management”. Duty cycling of equipment, lighting system dimming, use of distributive/emergency generation equipment, thermal storage, and shutting down low priority equipment are some of the demand management opportunities available to the Department.
Electrons	Are theoretical particles that science uses to define the medium flowing in the wires. Electricity and the related technology/science gets its name from this portion of the atom (a theoretical particle). The study of statistical physics is where the reader can go to get more hard science details, including the concept of the “flow of electron holes”. For the sake of this primer, the electron flows in the wires and the energy contained in the flowing electrons allows the devices to work.
Energy Budgets (device, system, facility, district, department)	<p>Are used in the conservation measure analysis process. At the basic level of the analysis, the auditor looks at the energy budget for a single device or load. Typically, each device or group of devices are measured for how much energy they consume when turned on, under what conditions does the device operate, and the hours of typical operation over a year’s period (typically based upon a 7 day, 24-hour time schedule, with a holiday operation or lack of operation correction factor.) The “device budget” is the primary building block of a facility energy audit.</p> <p>The auditor then uses the “device budgets” when defining the larger system(s) energy budget. System energy budgets look at the operation of various devices that have common operation and are linked together physically, electrically, or parallel operation.</p> <p>When all of the various “system energy budgets” are completed, the auditor or audit team reviews the systems to identify areas where the “system energy budgets” overlap or directly impact one another (i.e., lighting or computer systems adding thermal loads that impact air conditioning system operations.) The auditor also identifies variable operating conditions that impact equipment operations (i.e., weather, occupancy fluctuations, use of facility during normal business hours, change in process equipment usage, etc.) Once all the budgets are established, the auditor creates a “Facility Energy Budget.”</p> <p>The Facility Energy Budget is then used to determine expected utility costs by the facility over a determined period of time; a month, or season, or year. The auditor tests the budget by plugging in known weather and facility operational data, then forecasts what the electrical demand, electricity consumption, and natural gas consumption for the facility. Comparison of the theoretical and real energy bill determines how close the audit data and operational assumptions are in sync. Good auditor teams should be able to “fine tune” the various device, system, and facility energy budgets based upon running the compare and contrast tests over several cycles or billing periods. The process of establishing the energy</p>

	<p>budgets for all consuming devices in the facility is critical to the establishment of a facility's energy baseline.</p>
Energy Pie	<p>Is similar to the "Facility Energy Budget." An energy pie chart for a facility illustrates the percentage of energy usage within a facility's sub-system. Segments of the "pie" may include lighting systems, heating/cooling/ventilation systems, computers, process equipment, plug loads, etc.</p> <p>Sometimes energy auditors will establish a preliminary "energy pie" chart after a walk through of a facility. Auditors will use the chart to keep them within a reasonable range of consumption assumptions when developing device and system energy budgets. Developing a good energy conservation audit is part science and part "art." There are no two facilities alike. Every facility is unique. Science can get the auditor close to a good solution, and the "art" gets you that much closer to a great solution. Buildings, like human beings have personalities and quirks. Finding and accounting for them is the art form only experience can generate.</p>
Grid	<p>Is a term used by the electricity industry to describe the network of transmission and distribution wires that link power generation sites with those of the State's electricity consumers.</p> <p>The term "grid" can be applied to the wiring system in any size of a geographical region, from home to North America. In California, the grid is often referred to the State's Grid. California's Grid has interconnections to the other Western states and Canada.</p> <p>The grid is fragile. Too much electricity trying to pass through too small a set of wires will cause those wires to heat up. If the wire gets too hot, it will fail. Depending where the failure occurs determines the level of damage to the rest of the power generators and consumers.</p> <p>The California Independent System Operator (Cal-ISO) is tasked to make sure that the wires stay cool and the chance of grid failure kept to a minimum. One of the reasons for rolling blackouts is to make sure the wires stay cool. This condition usually means rolling blackouts in either Northern or Southern California and not the whole state.</p>
Hours of Operation	<p>Every energy consuming device or system operates for some period during the year. Energy auditors work with facility operations staff to determine under what conditions the equipment operates. Fixed schedules of operation (i.e., 6 am to 6 pm, Monday through Friday) make it easy to determine how many hours of operation a device or system may operate within a week, month or year.</p> <p>Equipment that varies its operation from day to day, seasonally, with the weather, variable loading, or frequency of use by an operator (i.e., a personal computer, or printer) requires a higher level</p>



	<p>of study. Observation, the use of recording meters with duration and level of load monitoring capabilities and mutually agreed system operation modeling are some of the options to determine hours of operation for those devices or systems.</p> <p>When you multiply the Load (in watts or kilowatts) times the hours of operation (hours per month) the resultant of the math is expressed in watts or kilowatts per hour per month.</p>
HVAC	<p>Refers to “<b>H</b>eating, <b>V</b>entilation, <b>A</b>ir <b>C</b>onditioning” and is the term used to describe the various sub-systems and equipment that make up the facility’s system which supplies conditioned air into the occupied spaces. Conditioned air supplies in a facility includes the moving of air, the filtering of air, the cooling or heating of air, and sometimes modified water content of the air (humidification/de-humidification). Energy consumption by HVAC systems will vary upon weather conditions and internal activity within the facility. Between 20 and 40% of the facility’s energy budget is used to power the HVAC system. HVAC systems are traditionally automatically controlled. Depending upon the size and complexity of the facility, HVAC controls can be as simple as a wall-mounted thermostat, as complex as a computer based facility energy management system, or somewhere in between.</p> <p>It is the intention of the Department’s Energy Conservation team to implement an integrated statewide energy and load management system. The system will allow any Departmental facility to link to the system using the existing Ethernet communications network. Local staff can operate linked facilities, or if no local staff is available, then remote control may occur from another facility or site. This system allows the Department to optimize staff resources to operate and respond to client service requests.</p>
LED	<p>Refers to <b>L</b>ight <b>E</b>mitting <b>D</b>iode, which is a small electronic device that emits light when power is applied. For years LEDs were used as indicator lights in electronic equipment. Since the 1990s however, the amount of light generated by LED devices has increased many times. So much so, the Department now uses LEDs in traffic signal fixtures. Refer to project 1a for more details, or go to the following web site for more information and product specifications:</p> <p><a href="http://www.dot.ca.gov/hq/oppd/rescons/led_site/led99x.htm">http://www.dot.ca.gov/hq/oppd/rescons/led_site/led99x.htm</a></p> <p>LED elements can also be found in other energy saving devices like EXIT signs, battery backup emergency lighting fixtures and mini-flashlights. The Department will continue to use LED technology as new applications are developed.</p>
Lighting Systems	<p>The majority of the electricity consumed, by the Department, powers some type of lighting system. Highway lighting, facility interior/exterior lighting, roadway sign lighting, traffic signals,</p>

	bridge and tunnel lighting systems make up the majority of the Department's lighting systems.
Load	Refers to any device or system that consumes energy, especially electricity. The "load" or workload in an electric circuit consumes the electricity and performs some kind of task, function, duty, or work. Light bulbs and motors are types of loads. The power needed for the device or system to perform its work is sometimes rated in "watts" (i.e., 100-watt light bulb, 500-watt microwave, etc.).
Motor	Refers to any device that uses electricity to create a motive force, either rotary or angular motion in order to perform work. Motors are used in fans, pumps, damper operation, compressors for air or cooling medium, elevators, escalators, printers, computer media drives, etc..
Phase Factor	<p>Vector math, made easy!</p> <p>Simply put, devices normally get their electricity by either single or three phase wiring. All electrical devices are required to say single or three phase on the body of the device and the installation instructions that comes with the device. For already installed equipment, look for the phase rating in the same location where voltage and amp data is marked. (Rule of thumb is two wires plus optional ground wire is single phase, three wires plus optional ground wire is three phases.)</p> <p>When calculating how much power a device or load uses, you need to multiply the current (amps) times the Voltage and then multiply that number by the square root of the phase of the device (for single phase you use 1; for three phase you use 1.7321. You can get more digits to the right of the decimal point if you want, however, most of the time 1.7321 works just fine.)</p>
Power Factor (and correction)	<p>iron. A capacitance load uses an electronic device called a "capacitor" that can store electrons, much like a battery, and release a pulse of electrons upon command. Fluorescent lights use capacitors to help start-up.</p> <p>The power factor of a device (or more importantly a facility) is important for two reasons. 1) If the power factor of a facility is below a threshold level, the electrical utility will assess a penalty fee based upon the size of the facility demand factor. Facility power factors are correctable and a cost effective conservation measure. 2) In the case of devices that may have to operate on battery backup (like LED traffic signals), if the power factor is low, then the amount of effective on time supplied by the battery is reduced. Example: If a device with a PF of 100% yields you 10 hours of battery backup operation, then a device with a PF of 50% will yield you 5 hours of operation. With this in mind, current departmental performance specifications for LED traffic signals requires the device to have a minimum PF rating of 95%. Quality testing shows</p>

	most devices at around 98%.
PV, (photovoltaic)	<p>PV technology extracts selected spectrums of sunlight and converts the light into electricity. PV systems are proven technology that has moved from the “custom design” to “off the shelf” mass produced product. The Department has used PV systems in repeater communication stations, emergency call box systems, facility power applications, warning beacons, traffic signals in remote locations, etc., over the last 17 years.</p> <p>Recent legislation may allow for the funding of PV systems installations at departmental facilities over the next 24 months.</p>
Volts, voltage	<p>Short version: The pressure behind the electrons flowing in the wires of a circuit that are necessary to push the electrons through a device. Operational voltage levels are standardized to simplify production of electrical devices and equipment.</p> <p>Long version: One volt is an electrical unit of measurement that describes the electrical potential difference and electromotive force equal to the difference of potential between two points in a conducting wire carrying a constant current of one ampere when the power dissipated between these two points is equal to one watt and equivalent to the potential difference across a resistance of one ohm when one ampere is flowing through it.</p>
What’s a watt? (VA or volt-amps, KW-kilowatt, Mw-megawatt, Gw-gigawatt.)	<p>A watt is a unit of measurement of energy that defines how much work is to be performed by the electricity. Wattage is calculated by multiplying a device’s operational voltage times its rated amperage, times its phase factor.</p> <p>(Example for a single phase motor: 120 volts X 11 amps X (the square root of 1) = 1,320 watts)</p> <p>Example for a three phase motor: 120 volts X 11 amps X (the square root of 3 or 1.7321) = 2,286.4 watts)</p> <p><b>To convert watts to:</b></p> <p>Kilowatts (1000 watts) divide watts by 1000</p> <p>Megawatts (one million watts) divide watts by 1,000,000.</p> <p>Gigawatts (one billion watts) divide watts by, 1,000,000,000</p> <p>Most non-residential electric accounts pay for the level of power service (KW Demand charges) that the facility may require the utility to provide if all the electrical equipment in the facility should come on at the same time. Most utilities only invoice demand charges based on real measured rate of consumption of the facility rather than its true potential demand.</p>
Watt-hour (kilowatt-hour, megawatt-hour, etc.)	<p>When anything consumes electric power (watts) over a period of time (an hour) the resulting consumable is known as a watt-hour, a thousand watt-hours is known as a kilowatt-hour or kWh. Electric utilities charge customers for the consumption of kWh. In</p>

	<p>automobile terms, a kWh is like a gallon of gasoline. The only difference is that we buy gallons of gas before we use them, and kWh are purchased as we use them. The “on-demand” delivery feature of electricity and natural gas commodities forces the supplying utilities to ensure sufficient product on hand to meet every users’ needs. When need exceeds supply, two things happen, the price to deliver added supplies goes up, and if the capacity of the supply network is reached, then curtailments of supply may occur.</p> <p>Bulk procurement of kilowatt-hours is measured in 1000 kWh units or megawatt-hours (mWh), or 1,000,000 kWh units called gigawatt-hours (gWh).</p>
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## **In the beginning:**

In the mid 1970s, the world saw the beginnings of market- driven energy shortages of oil supplies. The transportation sector and heating fuel industries were hit the hardest. Some of the impact of these periods of shortages were cost increases in the electrical supply market. The Department was one of the first government agencies to look at how it was using electricity to light up its roadways during this time. Two major efforts were undertaken during this time period.

- 1) The Department decided to only illuminate points of conflict (like on/off ramps and lane merges at those locations) and to reduce that amount of light to its minimal level. This effort was a major departure from the trend to light up every mile of roadway, like the eastern states. Data collected from that effort suggests that over 50% of the existing fixtures were removed and used on new construction projects and as maintenance replacement supplies.
- 2) The Department also modified its design specifications for future construction and rehabilitation projects to reflect these changes in policy.

During the electrical energy crisis in the late 1970s and early 1980s, the Department worked with the California Energy Commission (CEC) to conduct CEC energy audits at most facilities larger than 35,000 square feet. No/Low cost conservation retrofits were implemented by departmental staff with the assistance of California Conservation Corps members who were on six-month loan to the Department. At that time, a lot of the facility lighting systems were delamped with ballast disconnected.

In 1983, the departmental management decided to centralize all conservation efforts by the Department into a single functional unit called the Resource Conservation (RC) Program located within HQ Project Development. The rationale for the RC Program location in Project Development was due to both the mission of the unit to develop conservation opportunities for the Department, and its neutral position within the organization. RC Program was charged to develop/coordinate/facilitate/promote the Departments conservation efforts in the areas of energy, water, recycling, alternative energy and recycled material applications.

Beginning 1983 through 1988, the Department conducted a series of detailed facility energy audits on a sampling of different size facilities located in various ecosystems. The Department let a series of contracts with UC Santa Barbara to inventory and wind map departmental sites to determine optimum wind power generation. Antioch Bridge site tops the list and full site wind mapping study was implemented. During the same period, Caples Lake Maintenance Center was the site of a major photovoltaic (PV) and co-generation hybrid power plant to replace the existing diesel generation system. The center is not connected to any utility grid. The project won awards for excellence by the State and the Federal Department of Energy. One of many awards to be given to departmental resource conservation projects.

In the late 1980s, the Department initiated two facility conservation retrofit implementation programs. The goal of the demonstration projects was to determine the most cost-effective method to implement statewide conservation retrofits in the Department's facilities.

- State Efficiency Bond Act Project funding through the Public Works Board and General Services/Office of Energy Assessments (now known as DGS/Energy Management Division or EMD). District Offices in D-7, D-8 and D-10 were scheduled to participate in this project. About \$1.7 million in funding were approved for use to fund projects previously identified in investment grade energy conservation audits of the facilities.

- Energy Service Contracting (ESCO) funding of the entire project at three departmental locations (District 3 and 11 district offices and the Bay Bridge Administration Complex.) Approximately \$1.9 million in project and finance costs would be paid off over 12 years in monthly installments, where the monthly payments were less than the real value of the energy saved. Therefore, the Department got major improvements to its facilities with no up-front capitalization and documented savings covered payments plus an annual average net saving to the Department of about \$60,000.

Results of the post analysis determined that only about 40% of the Bond-funded projects got installed due to staffing shortages that did not allow all cost effective projects to be implemented. Unspent monies were returned to DGS. About four years after completion of the projects, the Bond loan was paid off. Of the ESCO projects, 100% were implemented, with payments expected to be completed in 2002. Monthly project reports still continue to document net savings to the Department. As a result of the analysis in 1994, departmental management approved the development of a statewide ESCO program for all remaining facilities. The Department, CSU (California State University) Chancellor's Office, and DGS/EMD staff started to develop a statewide ESCO program in 1994. Five years later with new legislation that authorizes ESCO funding of Conservation retrofits in State facilities, departmental and DGS staff started to implement a statewide ESCO program. Further information on the efforts of this project can be found in Project 5a in the main body of the 2001 Energy Conservation Plan Status Report.

Between 1990 and 1997, the Department identified numerous conservation opportunities at various departmental sites. A summary of those projects can be found in the main body of the 2001 Energy Conservation Plan Status Report.

The major conservation opportunity to identify itself during the early 1990s was the LED traffic signal upgrade project. Departmental staff helped to develop the product from a prototype to field installed studies, to final performance specification adoption. The Department is one of the leading forces that helped to establish national acceptance of the product. On average, the application of the LED signal reduces operational connected electrical load by 92%. Field life of a traffic signal went from about a year of operation for red incandescent lamps to over five years for red LED signals. LED signals rarely burn out like incandescent lamps. Replacement of LED signals are scheduled when the fixture gets too dim to be seen during sunny daytime operation. Amber and green signals last longer in the field since their operational hours are far less than red. Part of the project effort included the establishment of a Qualified Products list and a series of multi-vendor master service agreements for the procurement of LED signal fixtures. More information can be found at: <http://www.pd.dgs.ca.gov/default.asp?mp=/acqui/ledtraffic.asp>

A side benefit of full LED signalized intersection upgrades is that battery backup system (BBS) installation costs dropped from over \$60,000 per intersection down to about \$5,000 (if system fits into existing signal control boxes.) More information can be found at the following Web site: [http://www.dot.ca.gov/hq/esc/ttsb/electrical/electrical\\_index.htm](http://www.dot.ca.gov/hq/esc/ttsb/electrical/electrical_index.htm)

Beginning late summer of 2000 and continuing through late spring of 2001, the Department, working with a number of other State agencies and the Governor's Office, developed a series of emergency and project implementation action plans to help reduce the potential of rolling blackouts during the summer of 2001. Some of the results of these efforts are included in the main body of the 2001 Energy Conservation Program Status Report and its Attachment A.

Fiscal Year 2001/2002 and beyond will continue to see the Department continue its leadership role in the State's conservation efforts. Currently defined conservation opportunities will be

implemented, and research and development of new technologies and their applications at the Department will continue.

**Where does the Department use energy:**

Energy is consumed in some of the following areas:

- Traffic Signals (including ramp meters, lane control, warning beacons)
- Roadway Lighting
- Roadway sign Lighting
- Exterior Security Lighting
- Tunnel/Bridge Lighting
- Tunnel Ventilation
- Irrigation/Storm Water Pumping
- Facility Interior Lighting
- Facility HVAC Systems
- Computers and Ancillary Equipment
- Facility “Plug Load”

**What consumes energy at departmental sites:**

Some of the types of loads that consume energy include:

- Lights of any kind
- Motors, fans, pumps
- Computers, monitors, printers, plotters, servers, switches/routers/hubs, scanners, external media drives,
- Copy machine/FAX
- Staff appliances
- Chillers and refrigeration equipment
- Cooling towers
- Heaters/boilers
- Water coolers
- Process and manufacturing equipment
- Elevators, escalators
- Control systems
- Other plug loads.

### **How do we control the consumption- past, present, and in the future:**

Before automated controls were introduced in the middle part of the 1900s, most loads were turned off by an On/Off switch of some sort. It was and is true at most departmental sites. During the 1960s and 1970s, automated control systems were installed into various energy consuming devices and systems within the Department. Photocells and time clocks were added to external lighting systems. The time clocks made sure nighttime lighting systems did not come on during very cloudy days. Building automation systems for HVAC systems were installed to ensure better control of room temperatures. During the 1980s and 1990s, improved automatic control systems with more computing power were introduced and installed in some of the more recent departmental facilities.

Future control system options for the Department includes a statewide integrated energy conservation and load management system that allows the department to optimize statewide energy consumption. Distributive electricity generation, co-generation, alternative power generation, load cycling and curtailment, optimized cycling and loading of lighting and fan systems on a regional and statewide basis. The Department is working with the California Energy Commission and DGS/EMD staffs to define performance specifications for a larger version of the Department's statewide network. The concept of this larger version is to allow other state and local government agencies and department facilities, and the UC/CSU systems to be part of a larger government power block. The vision of this project is to use the conservation/load management abilities of this network to become a market force to help stabilize energy prices in California.

### **How do we tract the usage, past, present, and in the future:**

Most people look at their power bills and compare them against previous months or years operational data. In 1985, the Department started to automate utility invoice payments through the use of summary billing practices with cooperating utilities. Thousands of bills could be processed in the same time a single paper based invoice was processed. Over the years the Department has refined this process so that now the utility invoicing computer systems talk directly to the Department's accounting computer system. Once the invoicing data is sent, the Department 's computer transfers funds from the State's account into the utility's bank account. This process saves the Department millions of dollars in avoided accounting costs. As a result of this process, no one sees paper utility bills any more. Also in 1985, it was recognized that a lack of utility bills meant that staff had to find a different way to measure effectiveness of conservation activities.

Project by project conservation energy savings was the practical solution. Before any modification to a device or system is made, as part of a conservation measure, the energy auditor must establish an energy budget for the system. Documentation of the established energy budget forms the basis for a baseline energy profile of that project. From there, forecasts as to how the proposed conservation measure will perform against the baseline. That forecast is used to justify and obtain funding for the implementation of the project. Once the project is implemented, meter readings of operational parameters are collected and compared to the forecasted data and the baseline profile. Periodic data collection to verify continuation of savings must occur during the period of projected payback. Adjustments may be made over time to account for changes in business- driven operational parameters of the device or system(s). Baseline profiles may also need to be modified to reflect changes in operational parameters. This is done to ensure a valid comparison.



This type of analysis has to be performed for every conservation measure currently implemented or planned to be implemented to ensure up-to-date status of the Department's conservation efforts. To date, most of this process requires manual data entry into databases and spreadsheets.

Future tracking of installed conservation measures are planned to be fully automatic. Real-time data collected from facility energy meters, and energy management systems will be available for analysis via a web site. The Department is again working with DGS/EMD staff to develop such a statewide system under a grant from the California Energy Commission. More information will be available as the project develops. An update of this effort will be included in next year's report, and the Department's Resource Conservation Web Site:

<http://www.dot.ca.gov/hq/oppd/rescons/rchomepg.htm>

The Department will continue the practice of tracking and measuring the effectiveness of those conservation measures on a project-by-project basis. Utility data will be used to determine the value of the documented savings.

### **From micro to macro, trying to understand how all the pieces fit together:**

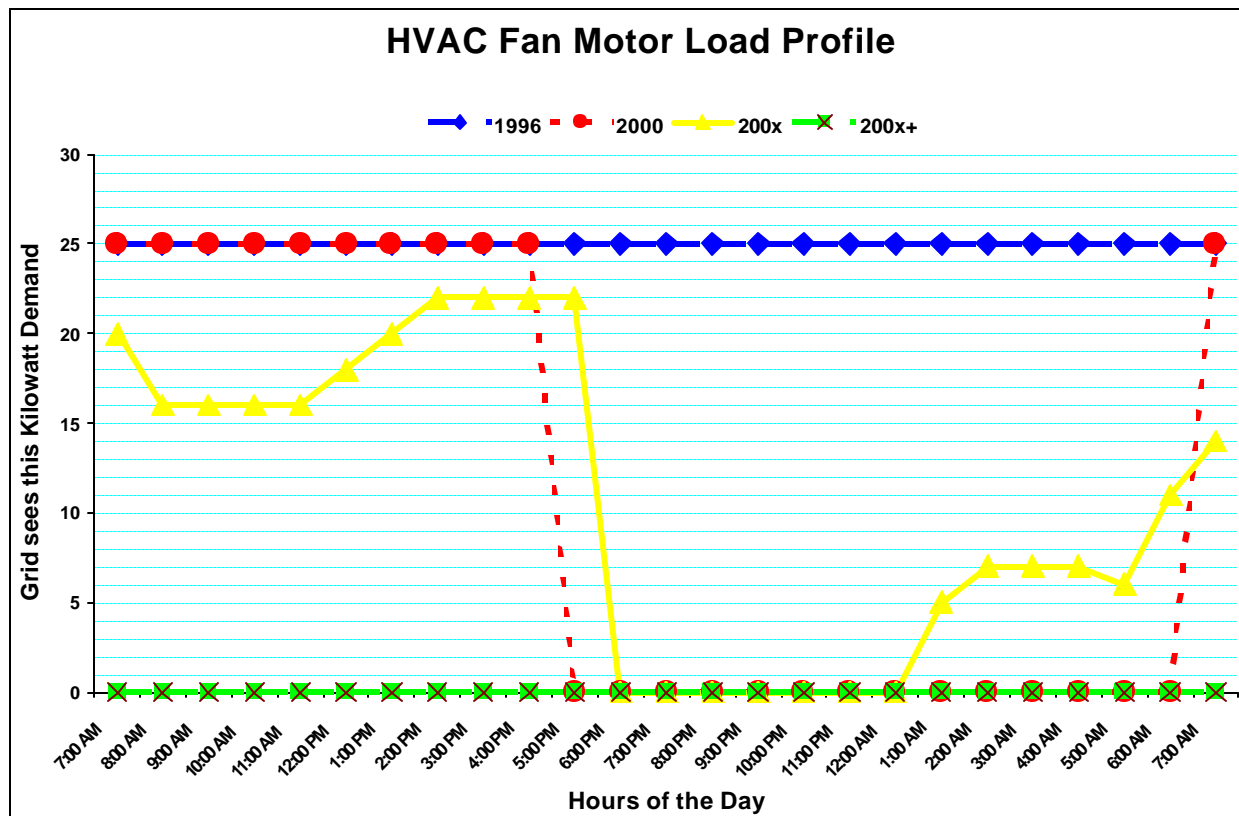
Most of this "Primer" has dealt with the "micro" point of view, at the device or system level. The remainder of the "Primer" will focus on the "macro" or "big picture" point of view. So, how do the small projects relate to the statewide consumption profile?

A common ground is a good starting point. Every day has 24 hours, and a day of equipment operation fits into one of two categories: A workweek day or a weekend/holiday (non-business day).

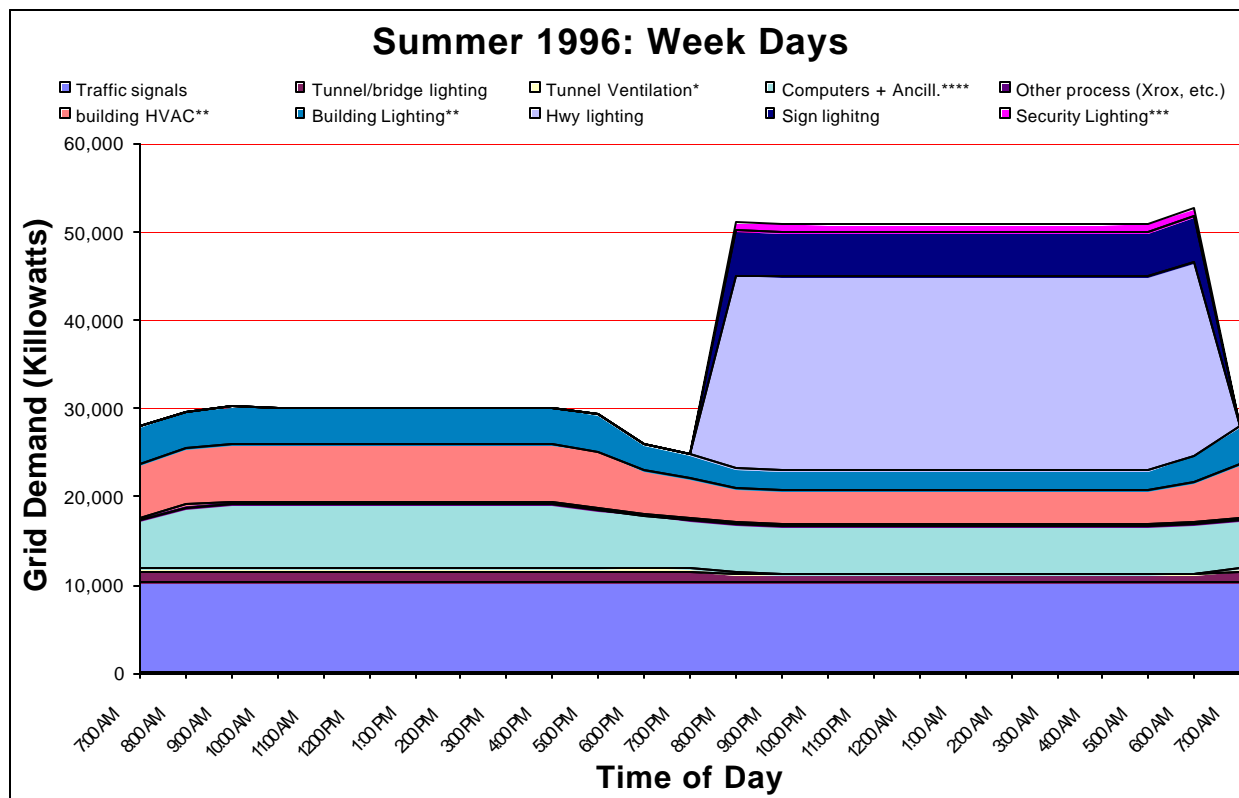
Some loads only operate during the business portion of the day and may turn off or reduce the level of energy consumption during non-business hours. Some loads operate at night or daytime only. Some loads are on all the time.

Some loads vary their operation as a function of weather.

The following chart is for a motor that drives a fan in an office building. This chart is plotted over a 24-hour period of time (from 7 am to 7 am.).



Based upon the various groups of energy consuming equipment listed earlier in this document, data was collected from past energy audits, and Maintenance equipment records. From these various data sources, typical operational profiles can be applied towards the loads. A sample chart below shows the sum of all the Department's loads divided into three load categories: Base Load, Nighttime Loads, and Building Loads.



### Statewide Consumption Profiles:

Departmental statewide consumption profiles look at trends of consumption. There are four sets of profiles included in this section of the Primer.

1. Before 1996, which will function as a baseline of consumption profiles for the 1990s. Some conservation has occurred prior to this date, and they are now considered part of the baseline.
2. 2000, represents the transition of the Department as conservation projects come on line.
3. 200X, represents the potential impact of all currently planned conservation measures should they be implemented. (Note: these series of charts represent the best-educated forecast of the profile trends.)
4. 200x Plus, represents the impact of having all Department facilities generating their own power.

Each set of charts contains ten charts in the following order:

Summer Weekday vs. Weekend/holiday total profiles

Summer Weekday 24- hour primary load profile

Summer Weekend/Holiday 24- hour primary load profile

Summer Weekday 24- hour summary load elements profiles

Summer Weekend/Holiday 24- hour summary load elements profiles

Winter Weekday vs. Weekend/holiday total profiles

Winter Weekday 24- hour primary load profile

Winter Weekend/Holiday 24- hour primary load profile

Winter Weekday 24- hour summary load elements profiles

Winter Weekend/Holiday 24- hour summary load elements profiles

The last set of charts in this section will compare and contrast some of the charts in sets 1 vs. 3 and 4. The differential seen in those charts are meant to illustrate the forecasted improvement in the Department's efforts to optimize its energy consumption.

**In conclusion, “the never ending story”:**

As illustrated in this document, there is a lot of work to be done by all. Vehicle fuel consumption improvements will be added to future editions of this primer. Updates to the profiles will occur. New technologies will allow further conservation opportunities to the remaining energy-consuming inventory.

Remember the best conservation measure is to not have to use it in the first place. So, use it if needed and turn it off when not in use.

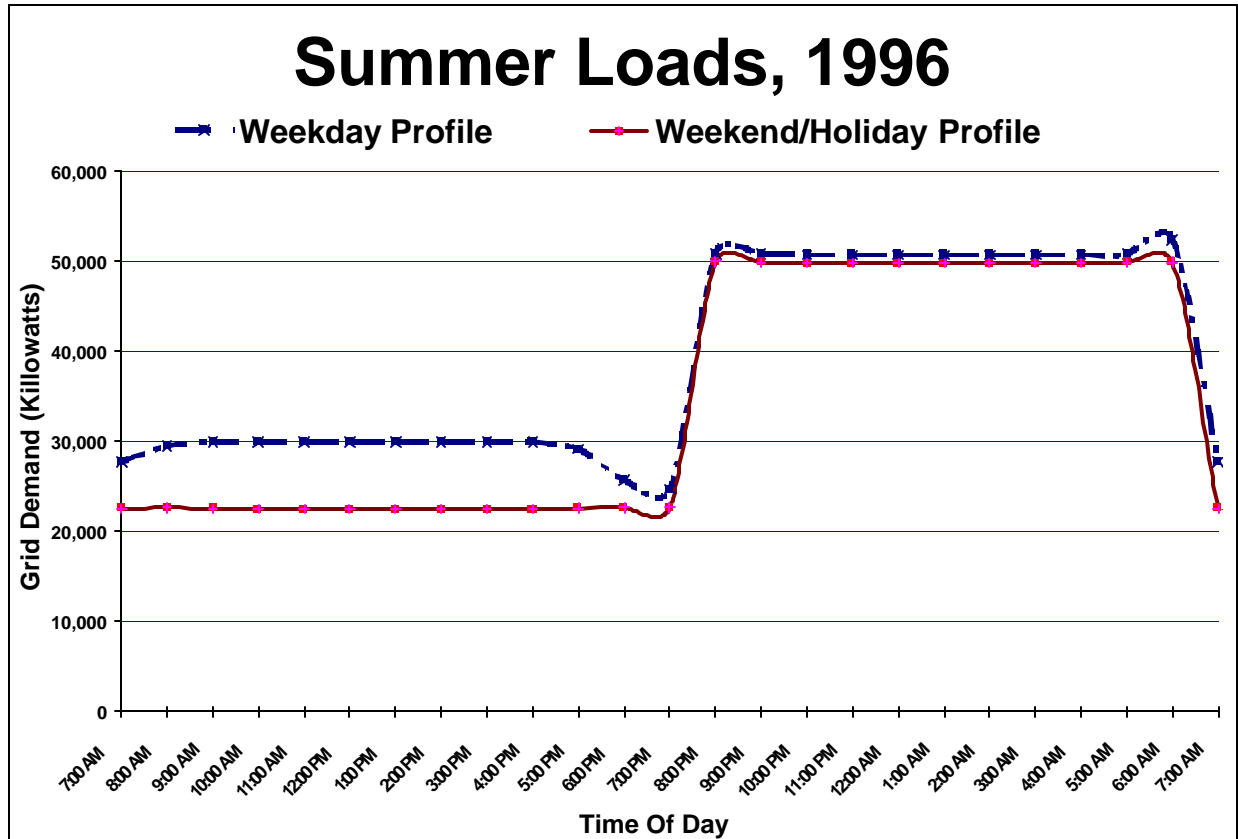
Stephen C. Prey, Coordinator

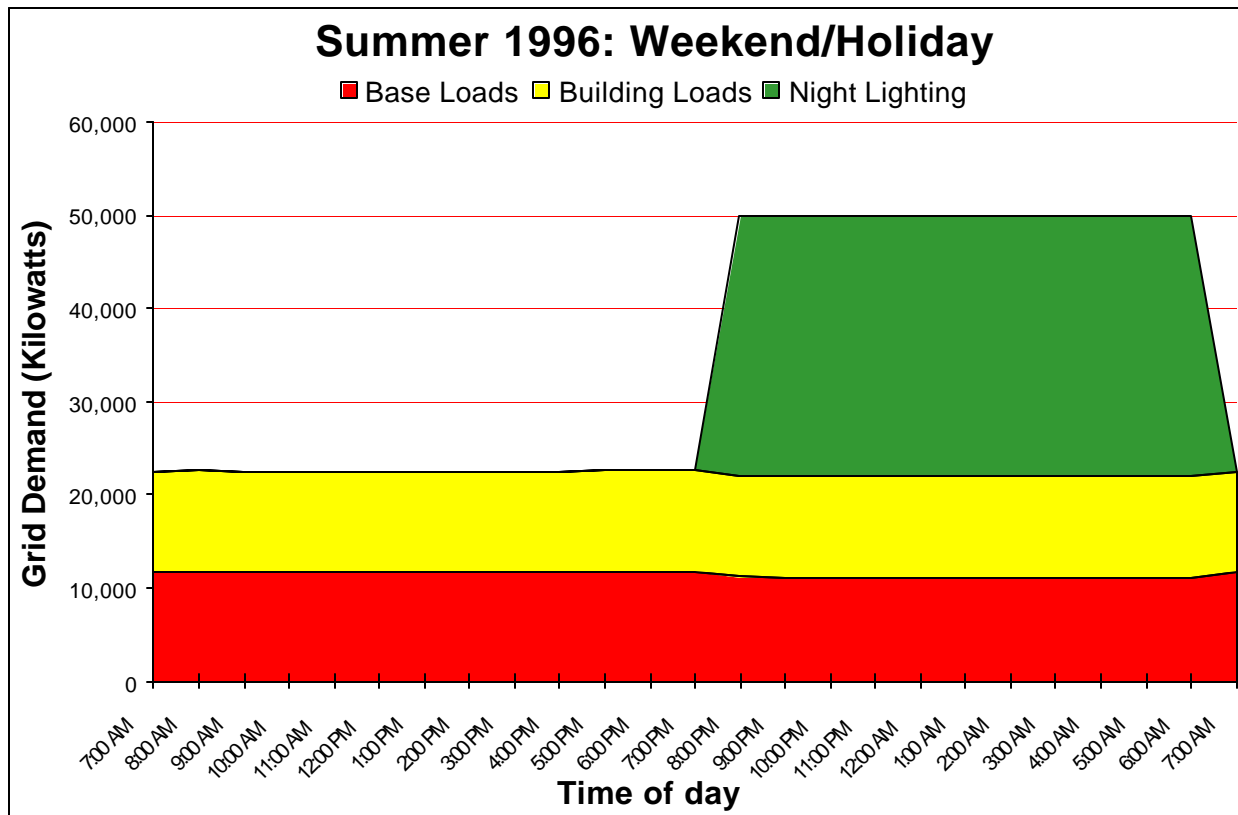
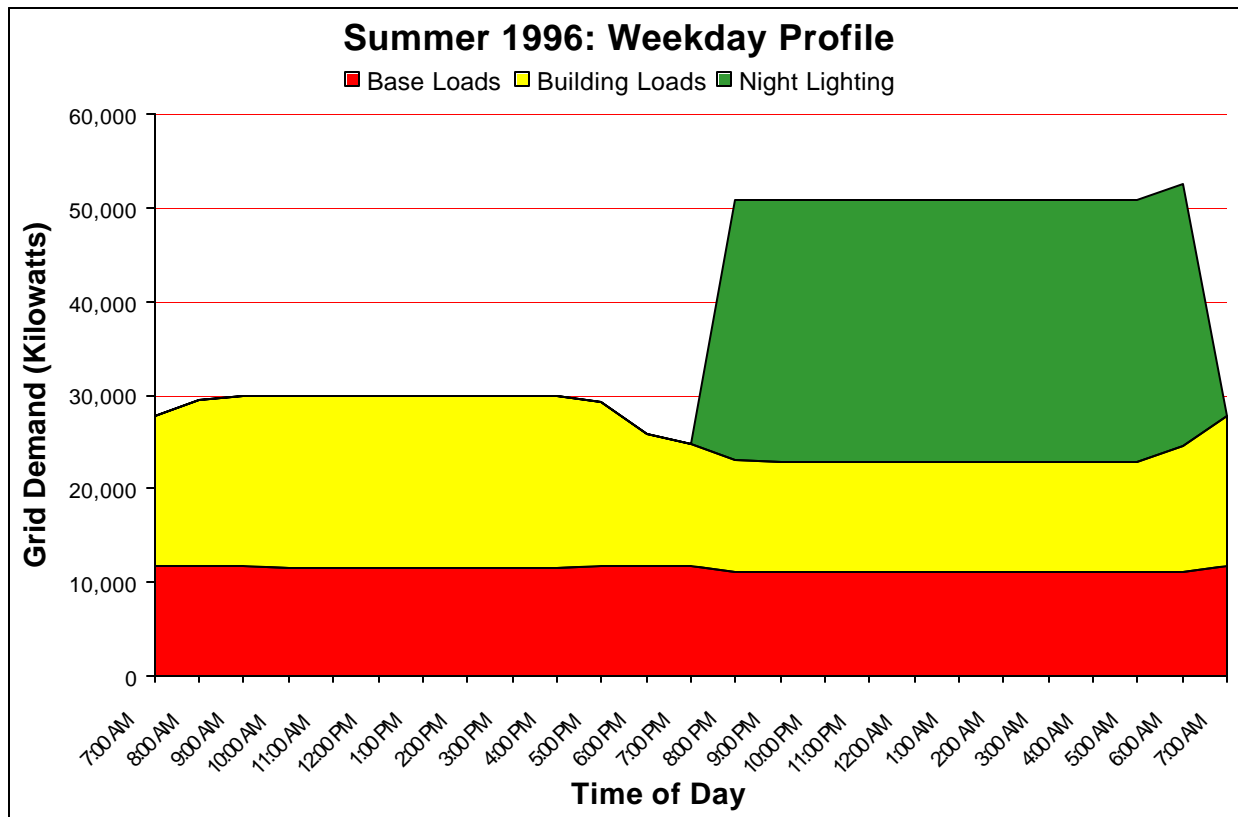
Departmental Energy Conservation Program.

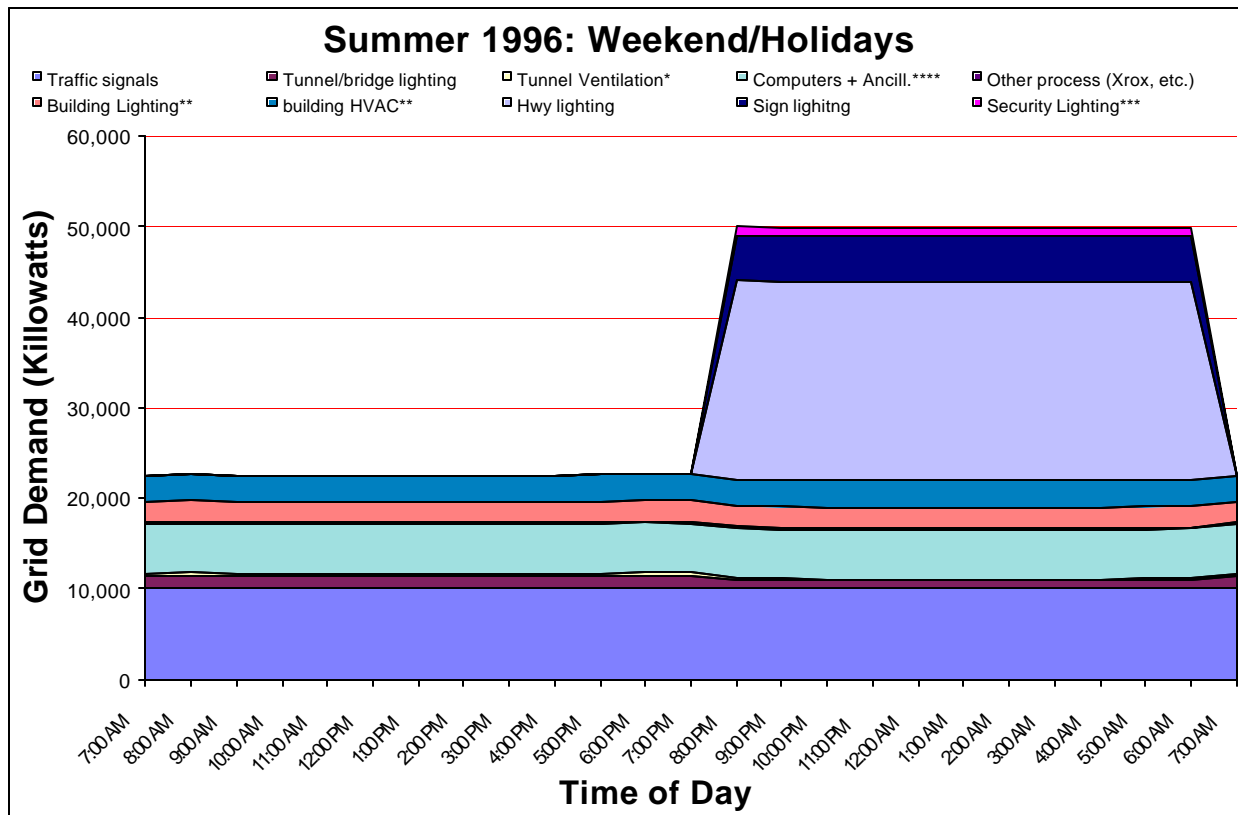
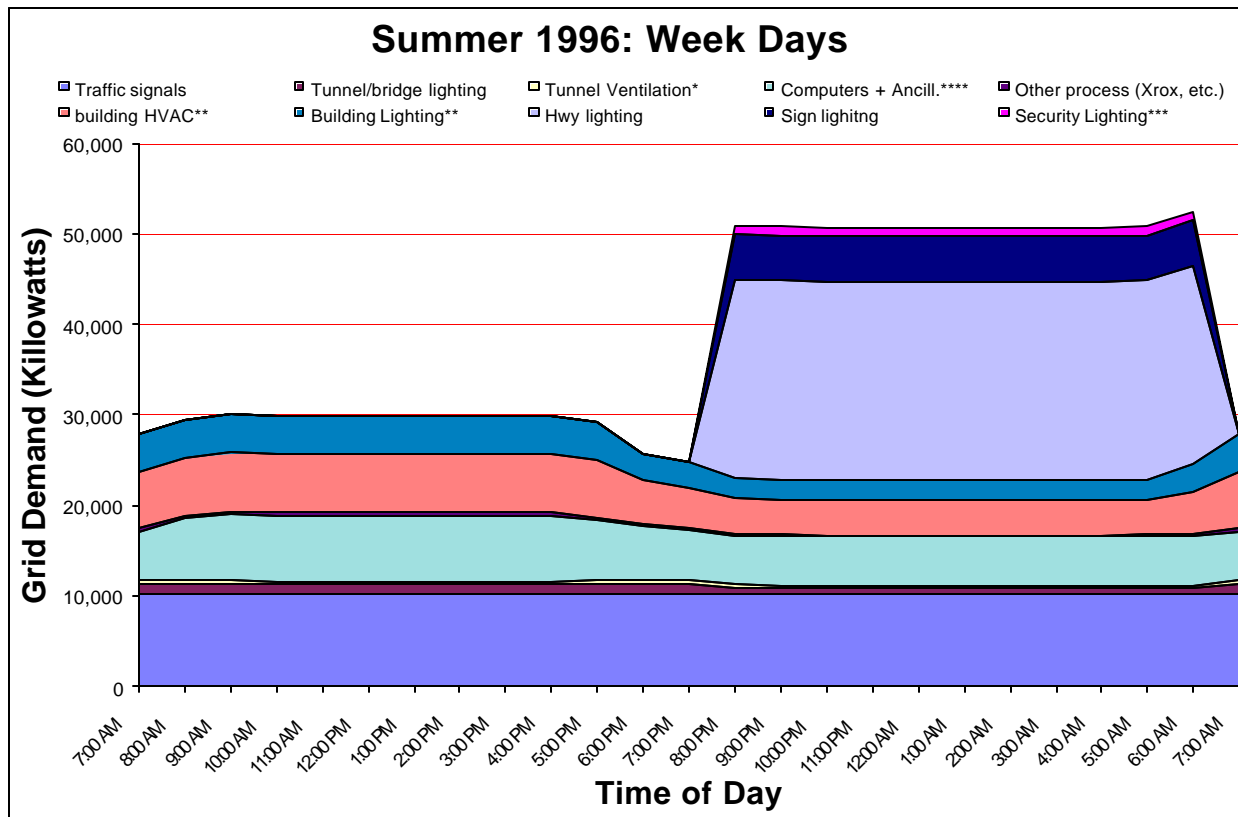
# 1996 Data Charts

## Baseline

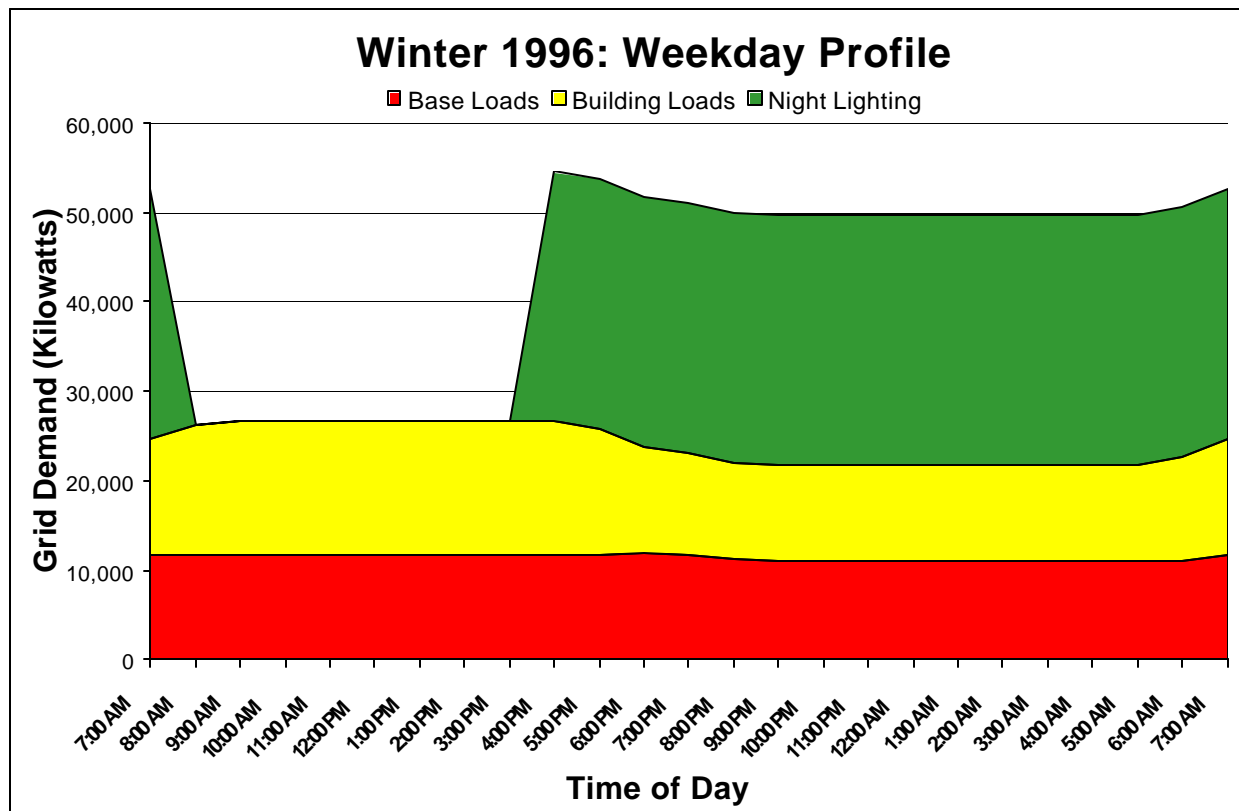
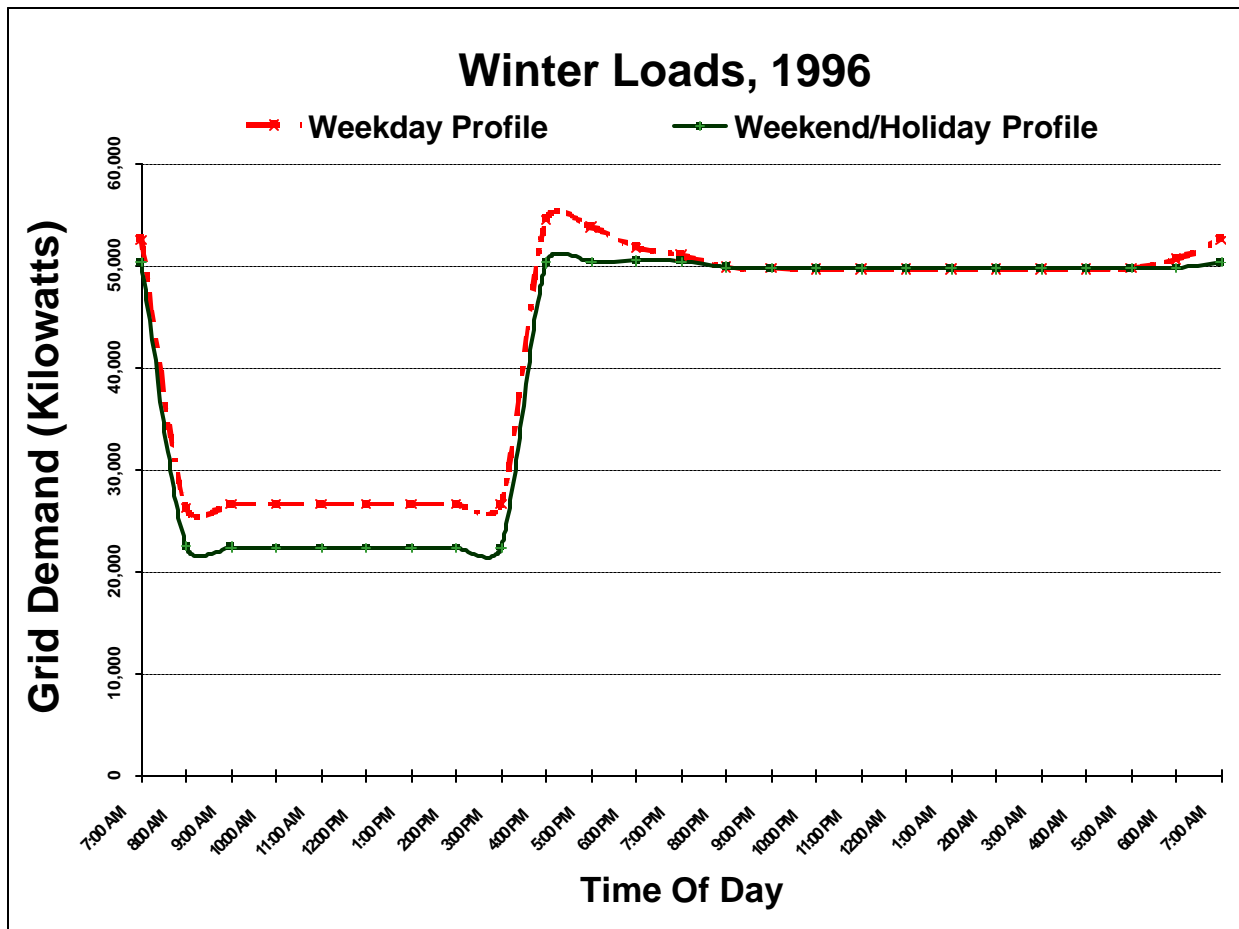
Summer of 1996



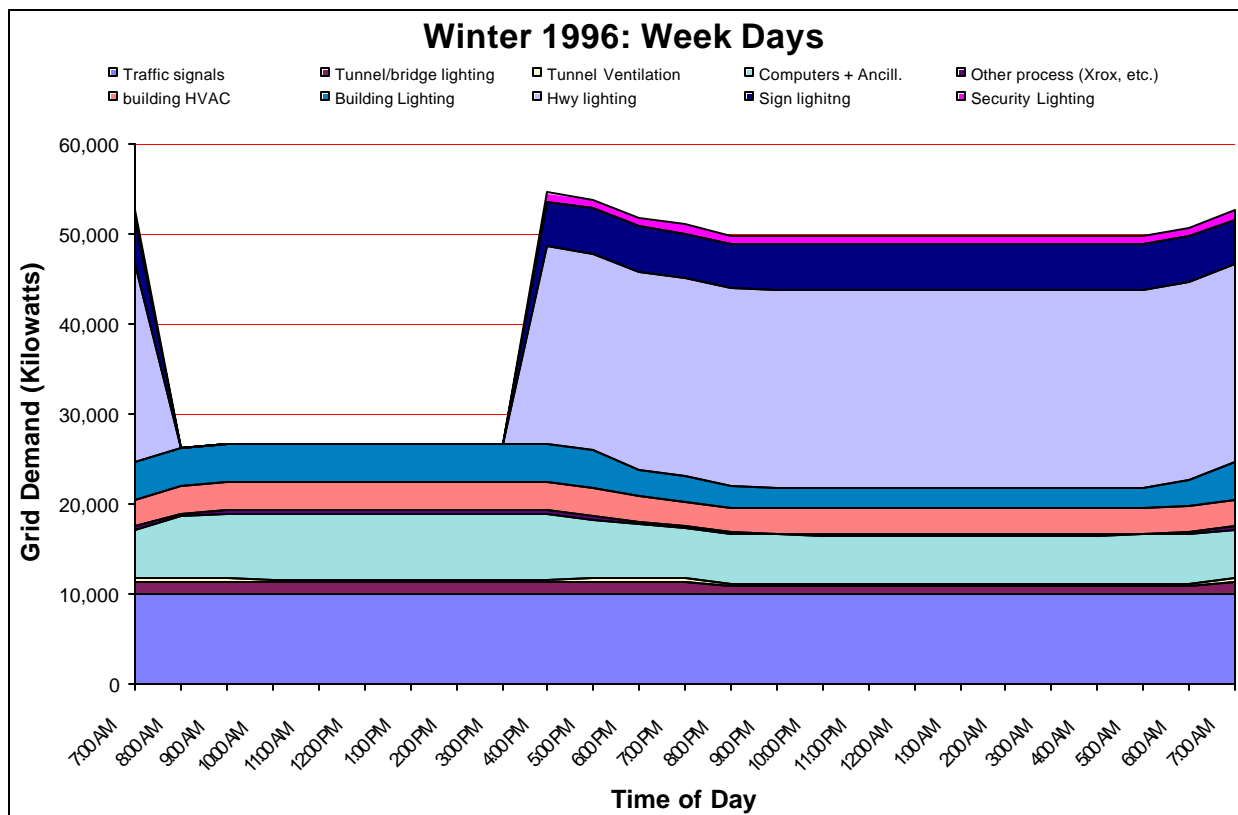
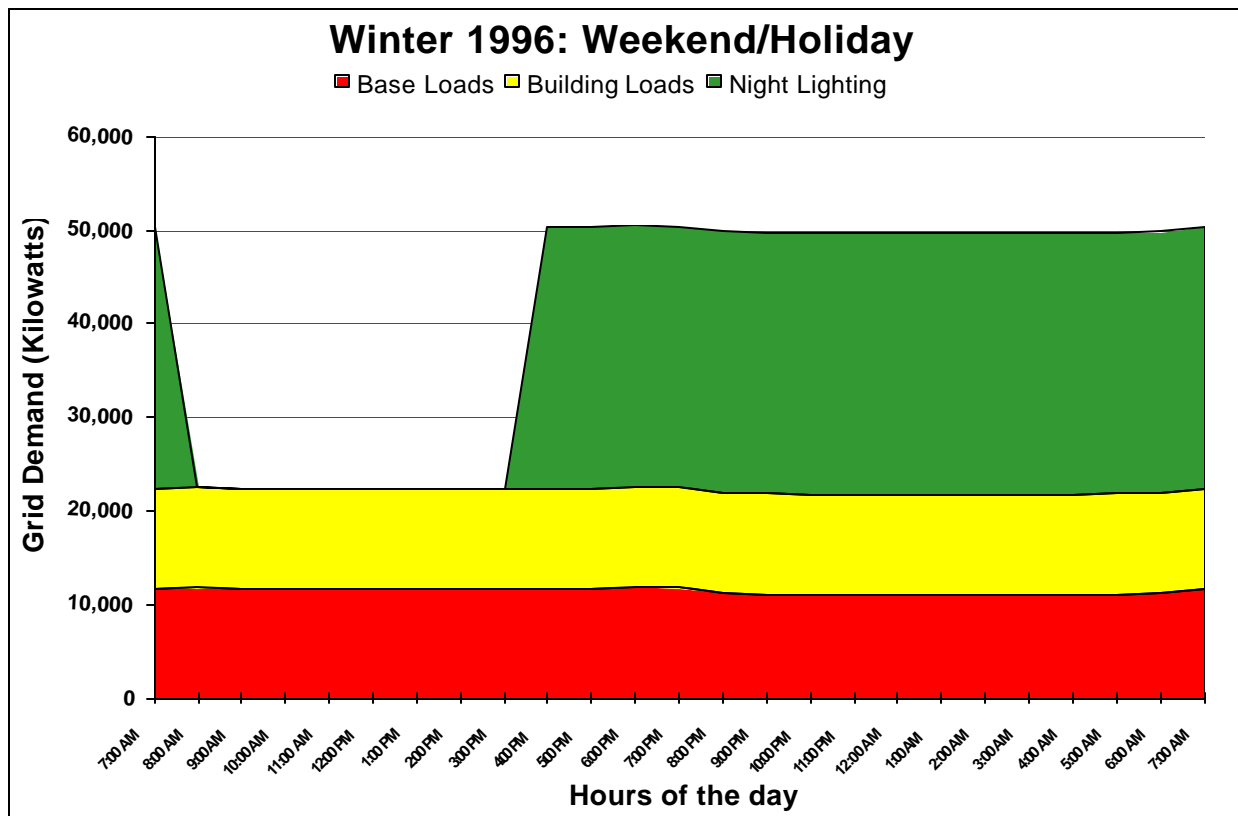


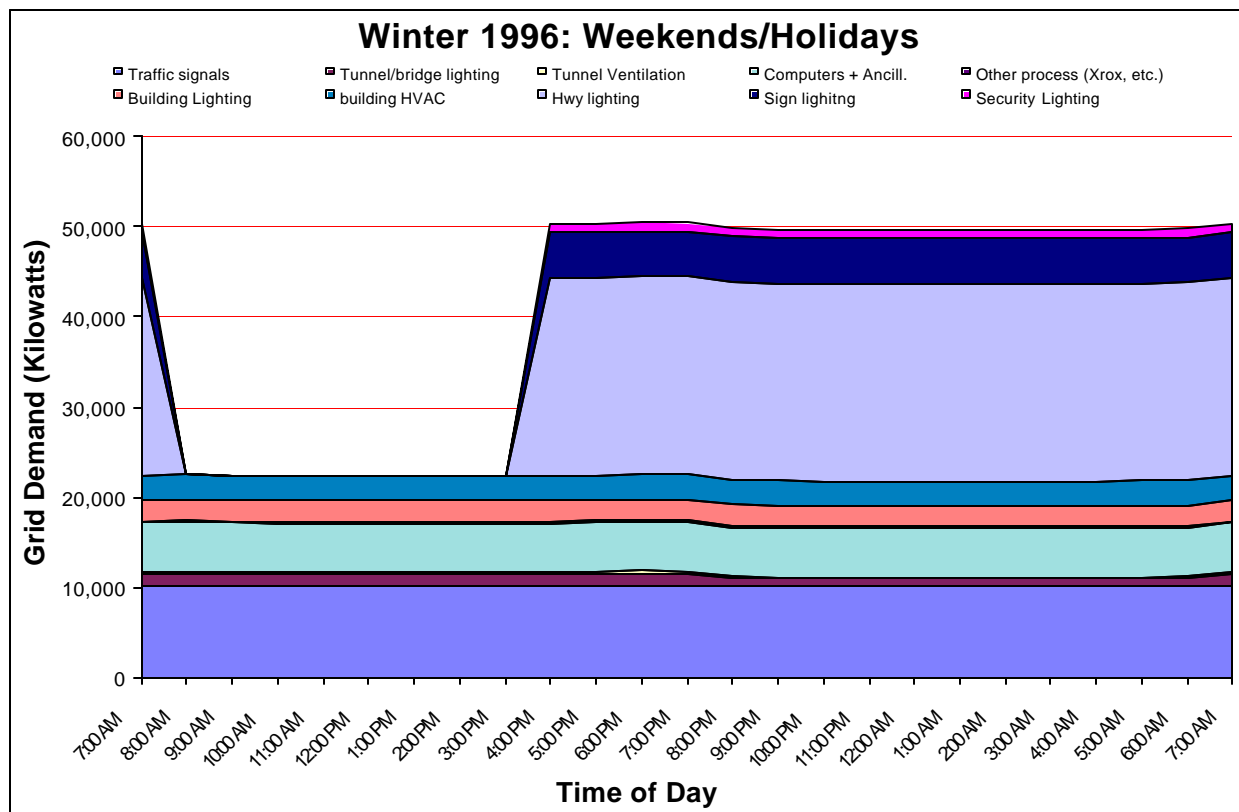


**Winter of 1996**

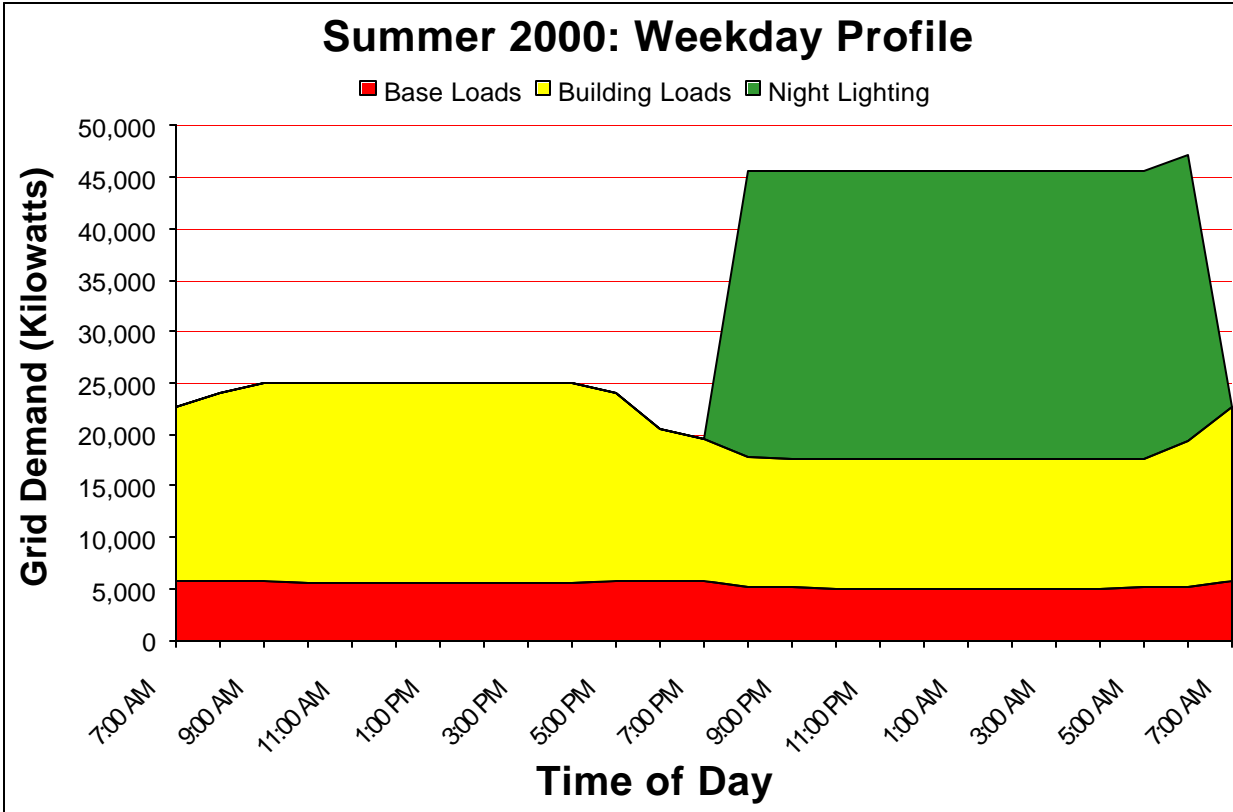
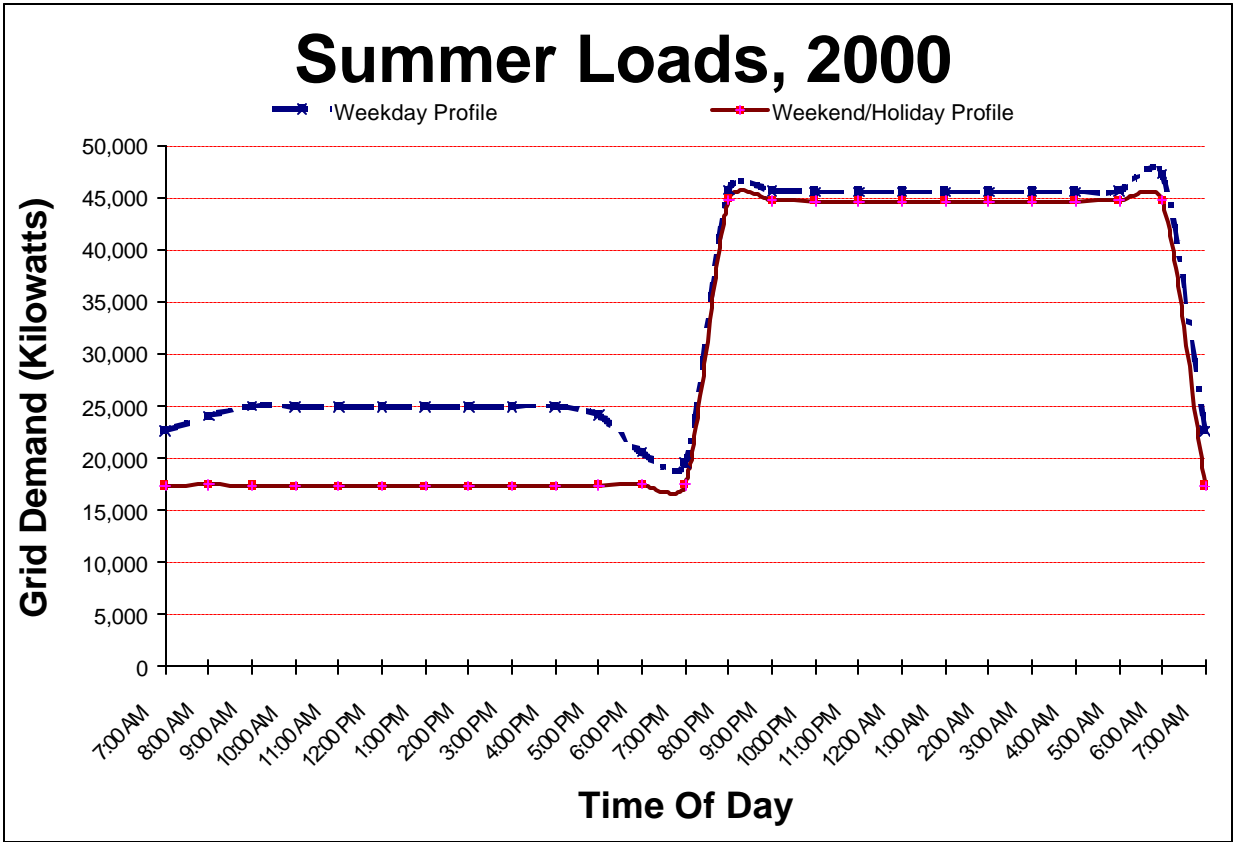


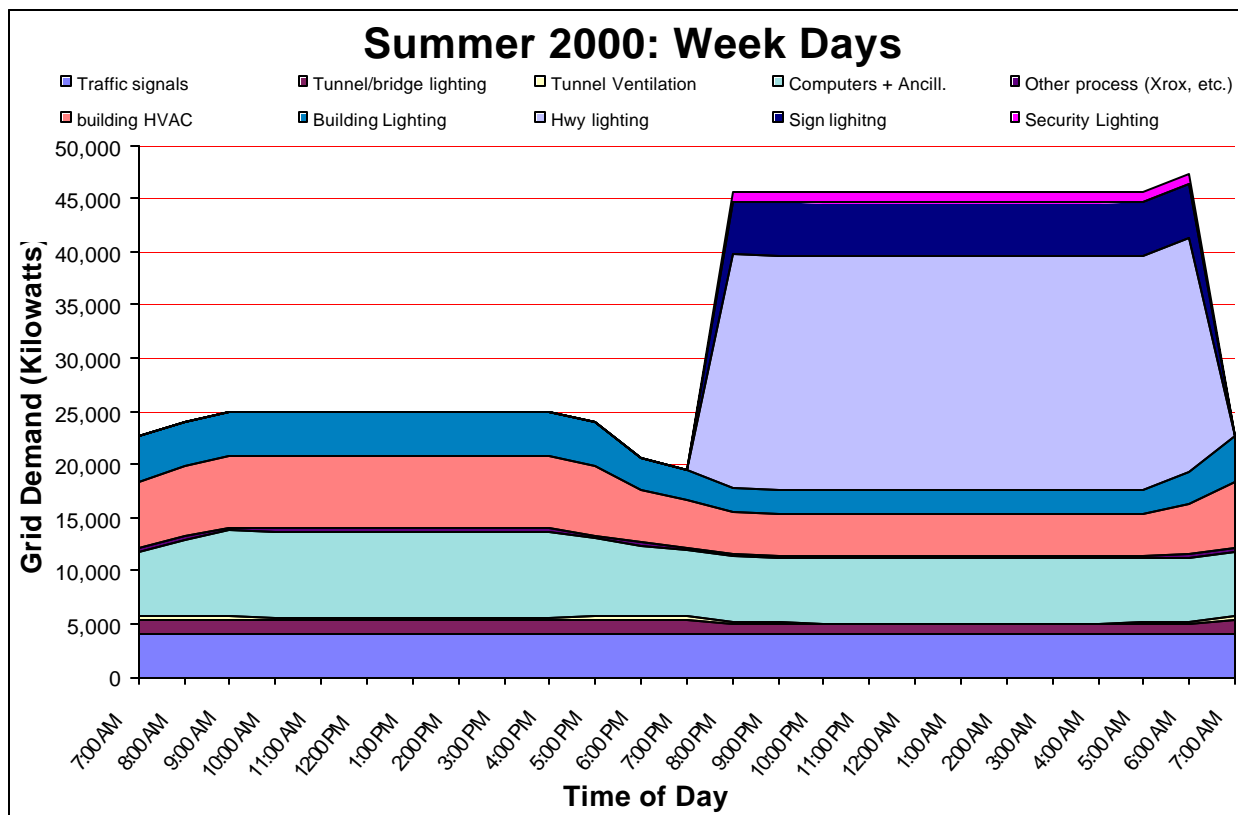
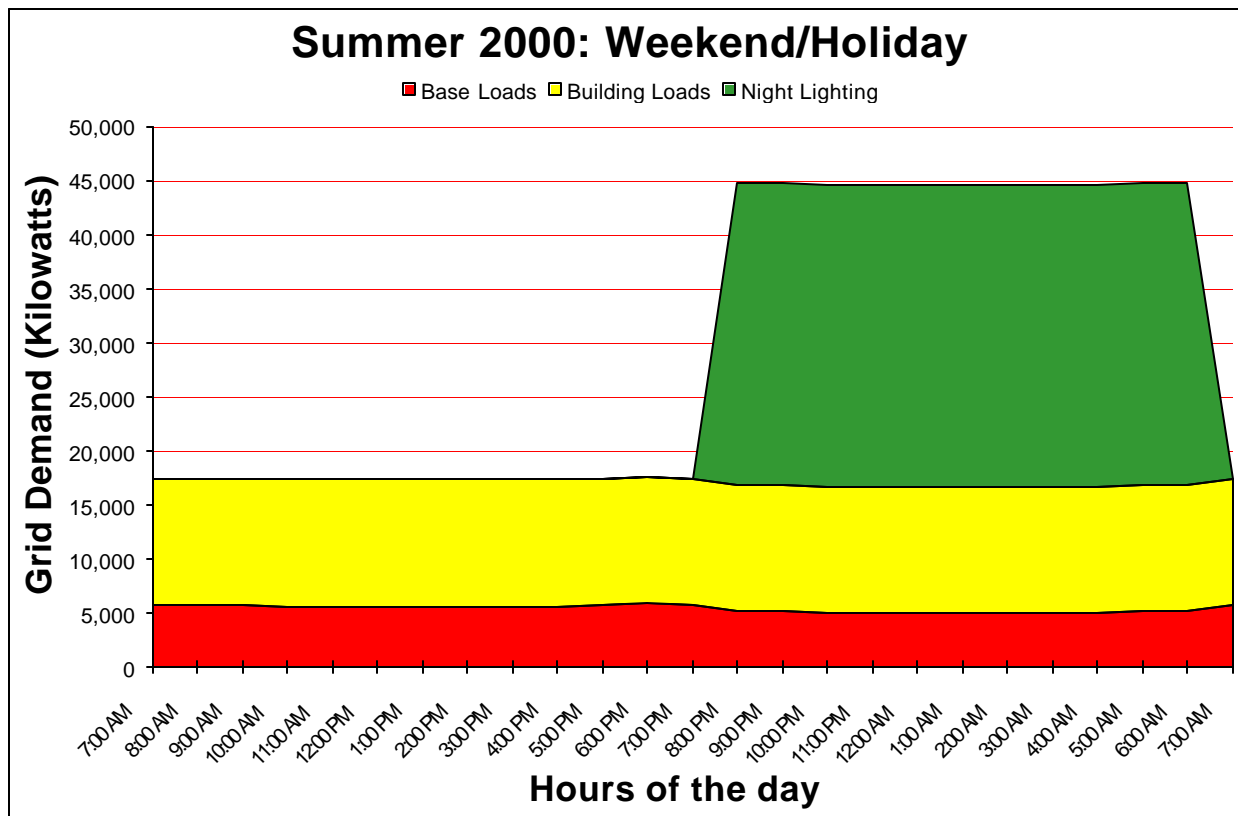


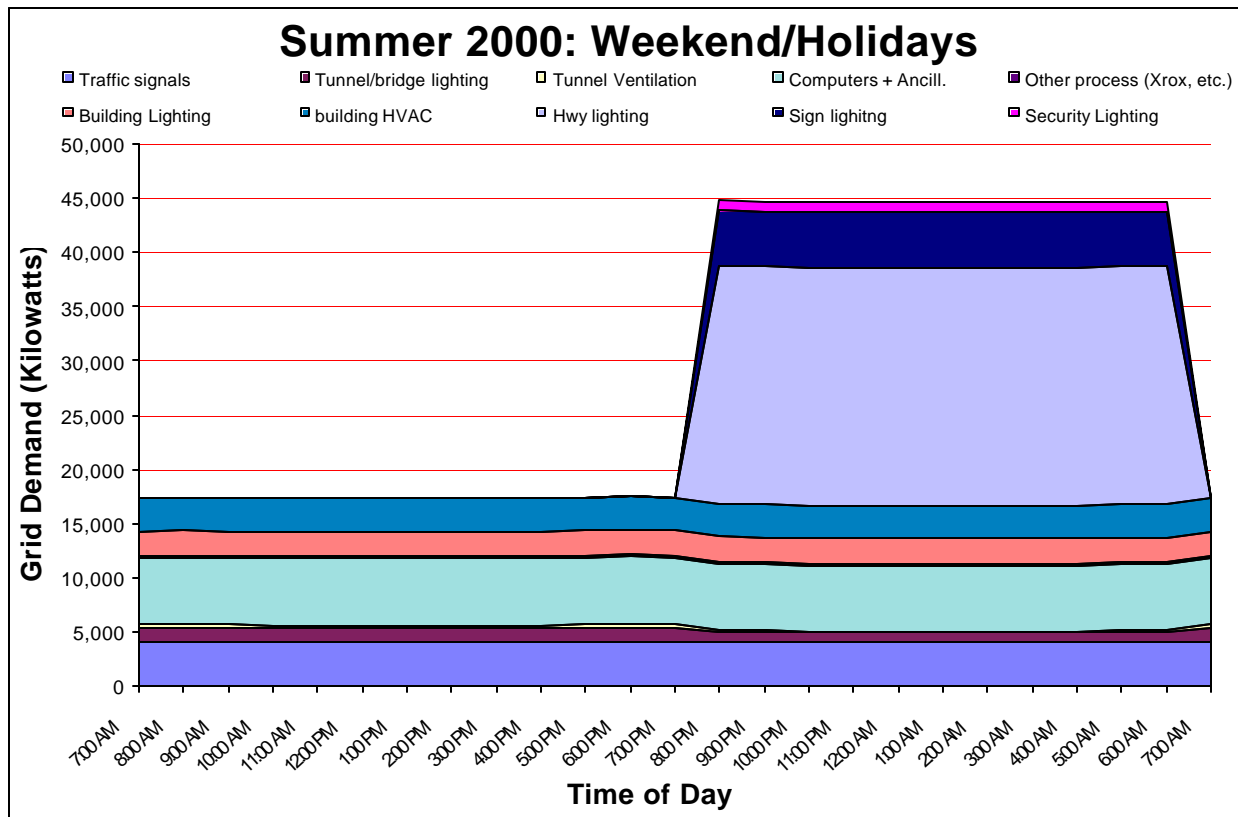




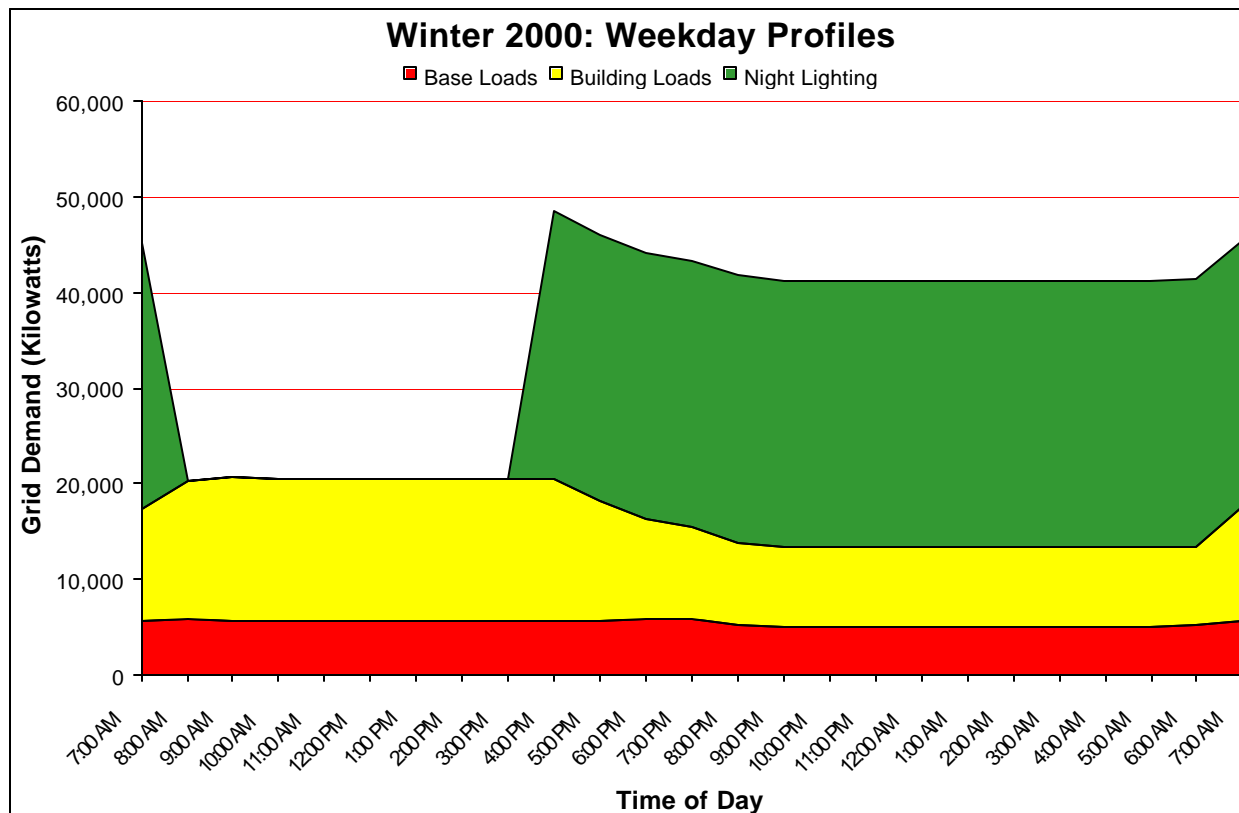
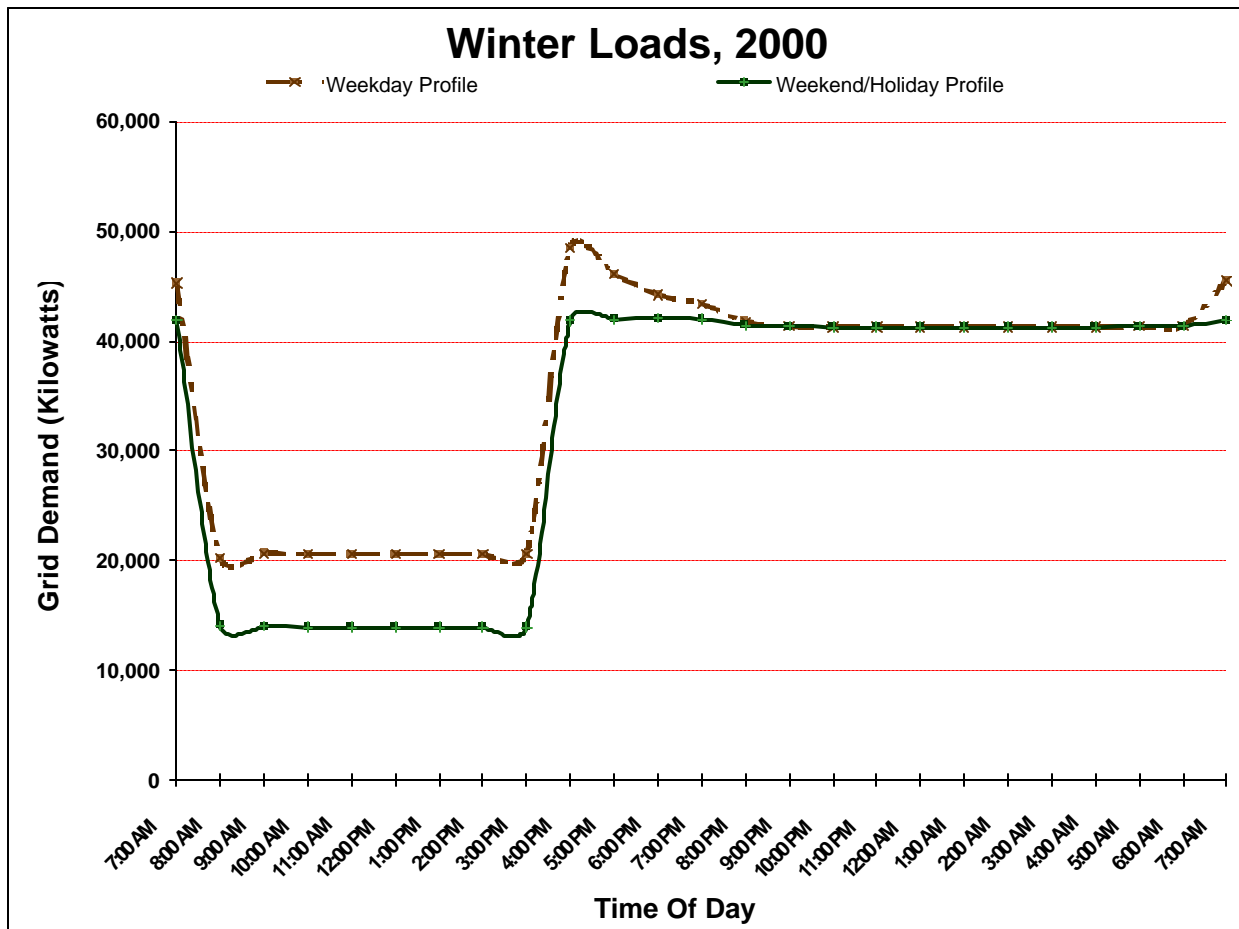
**Summer of 2000**

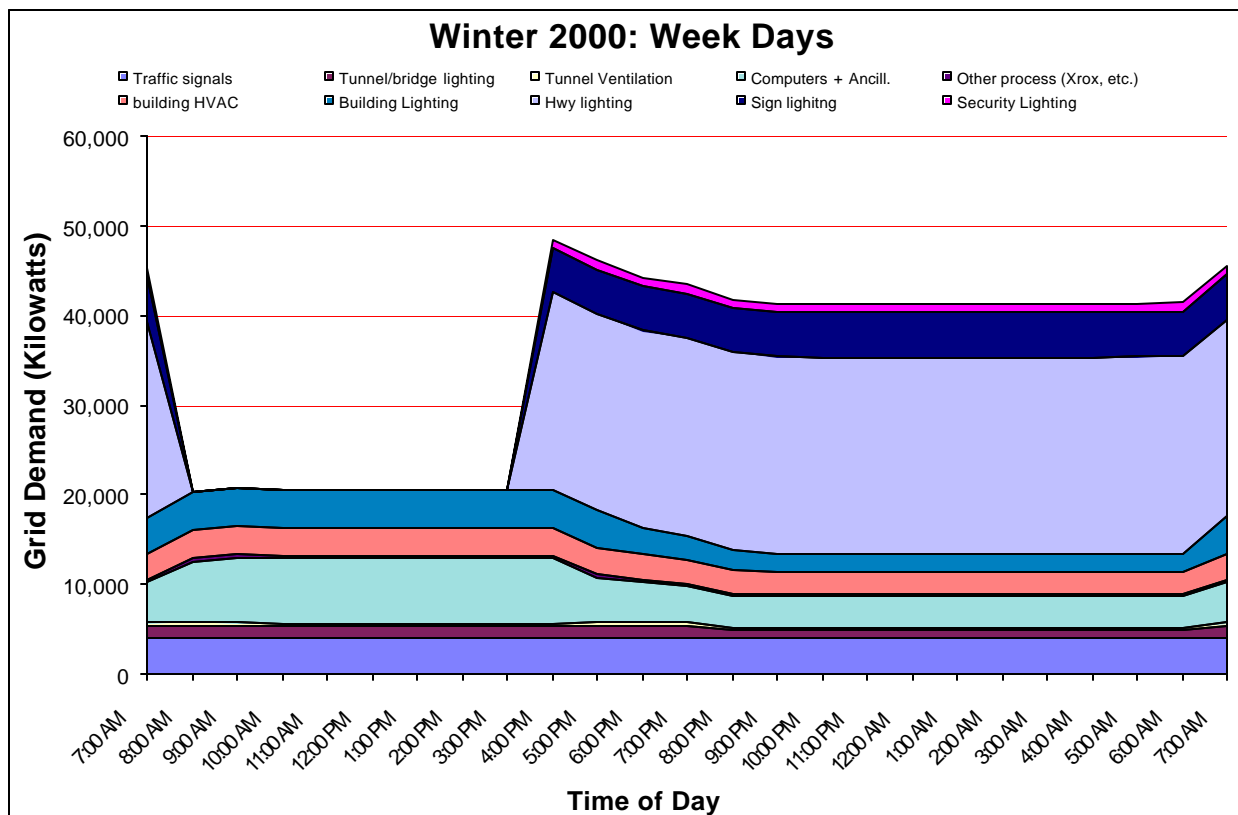
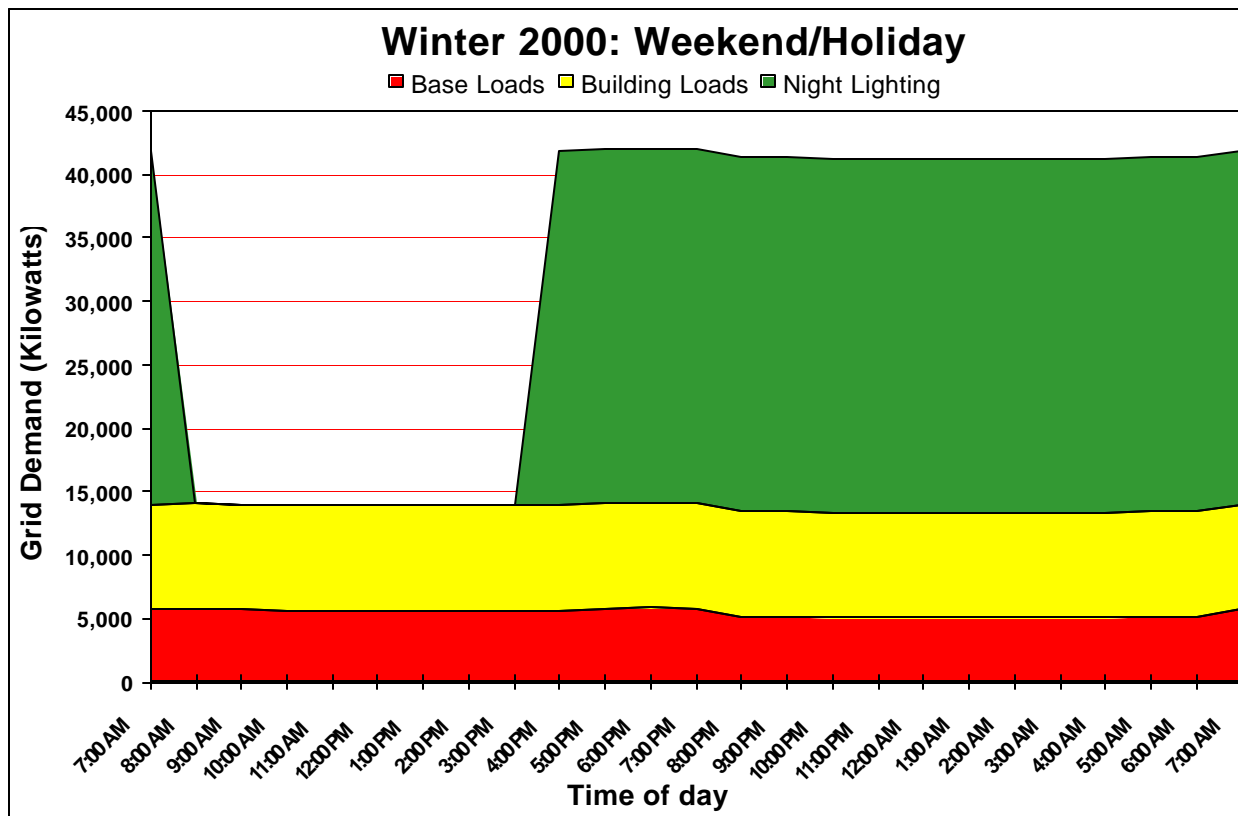


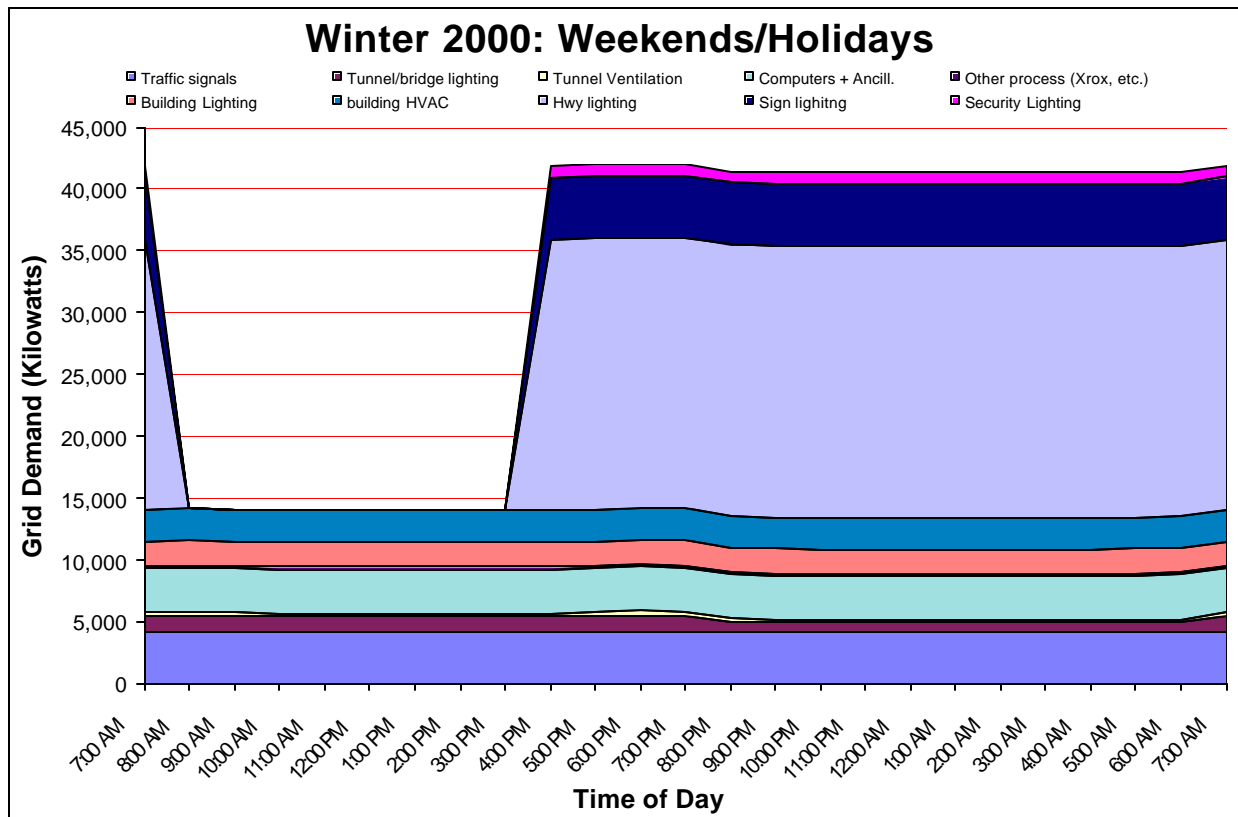




**Winter of 2000**

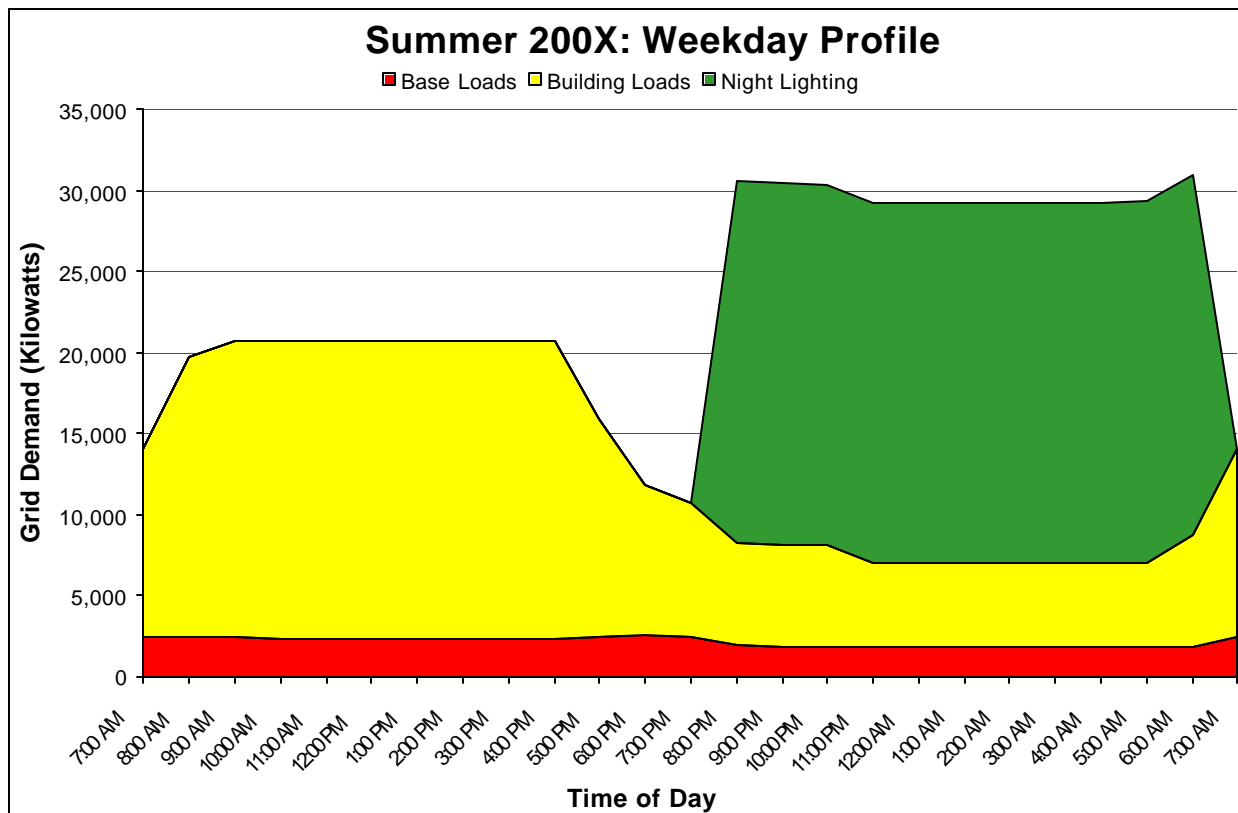
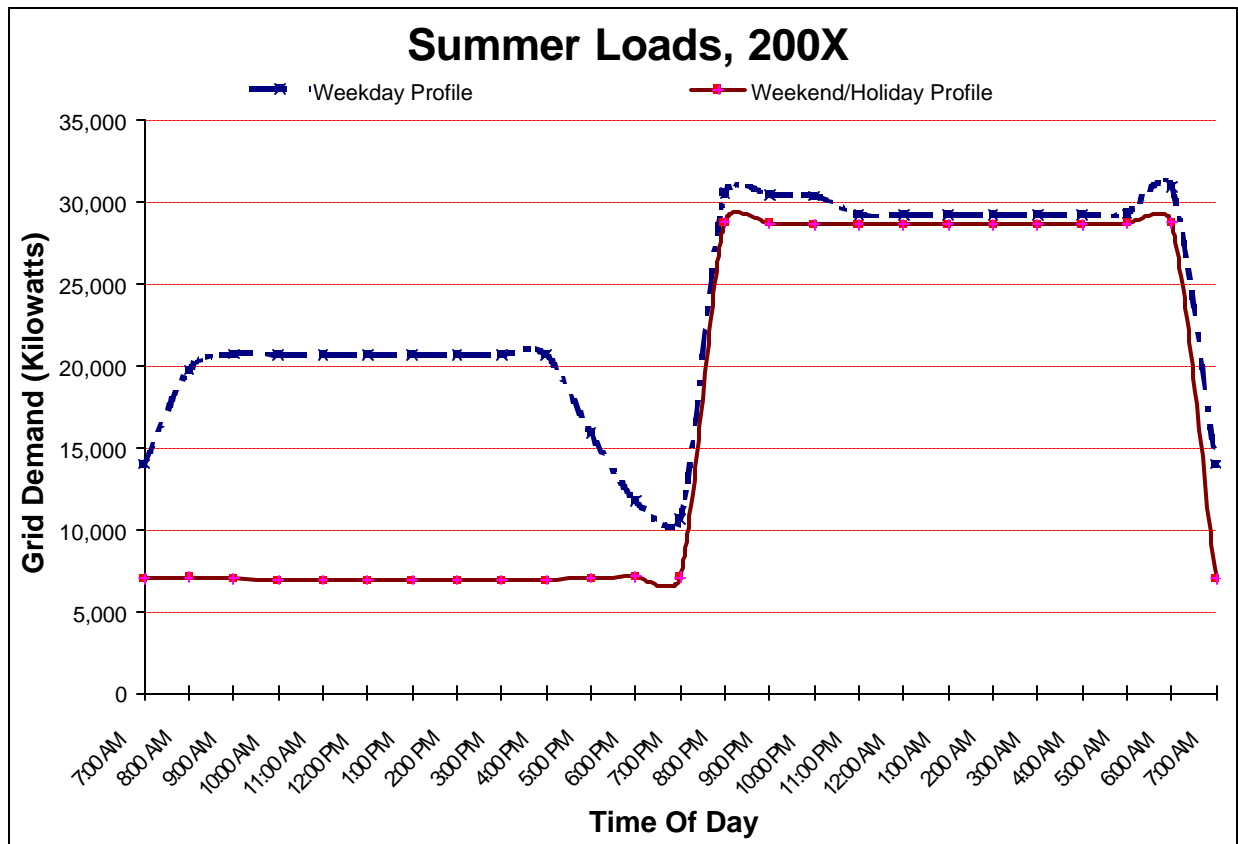


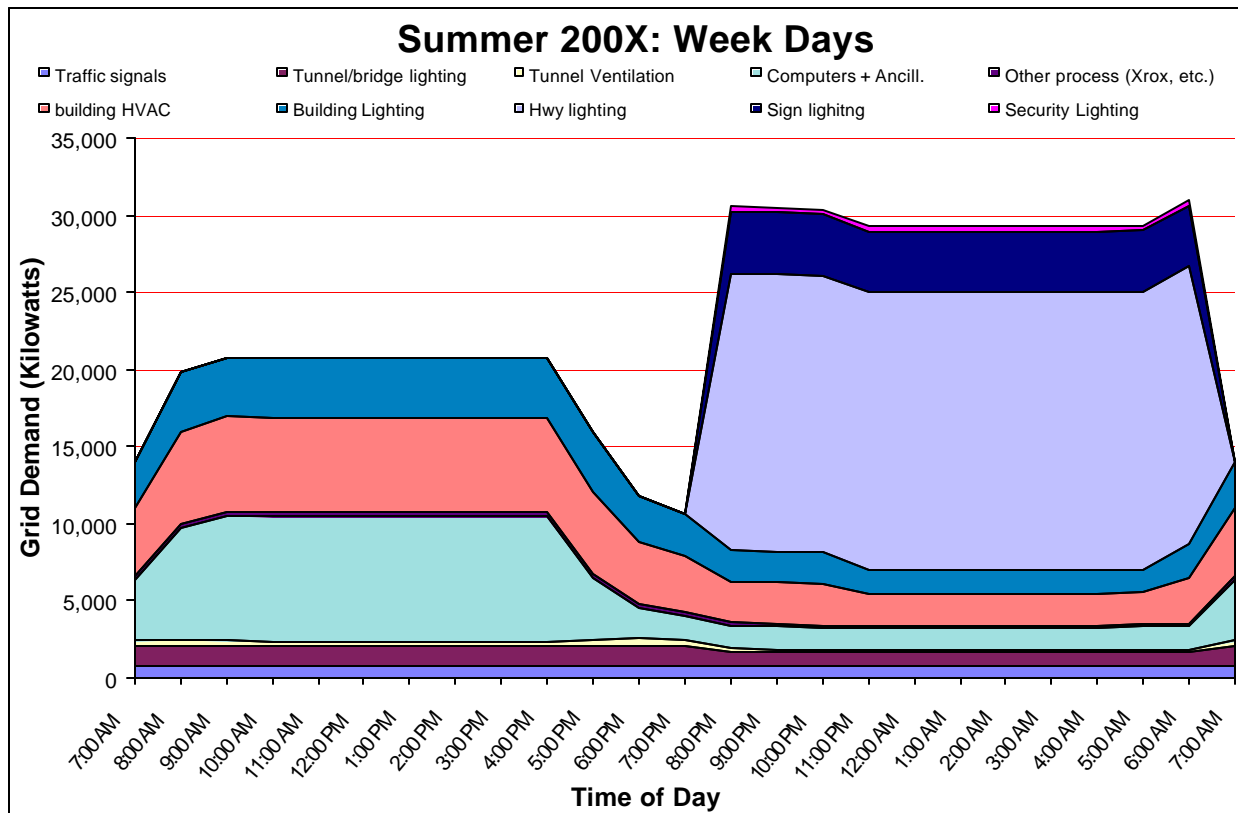
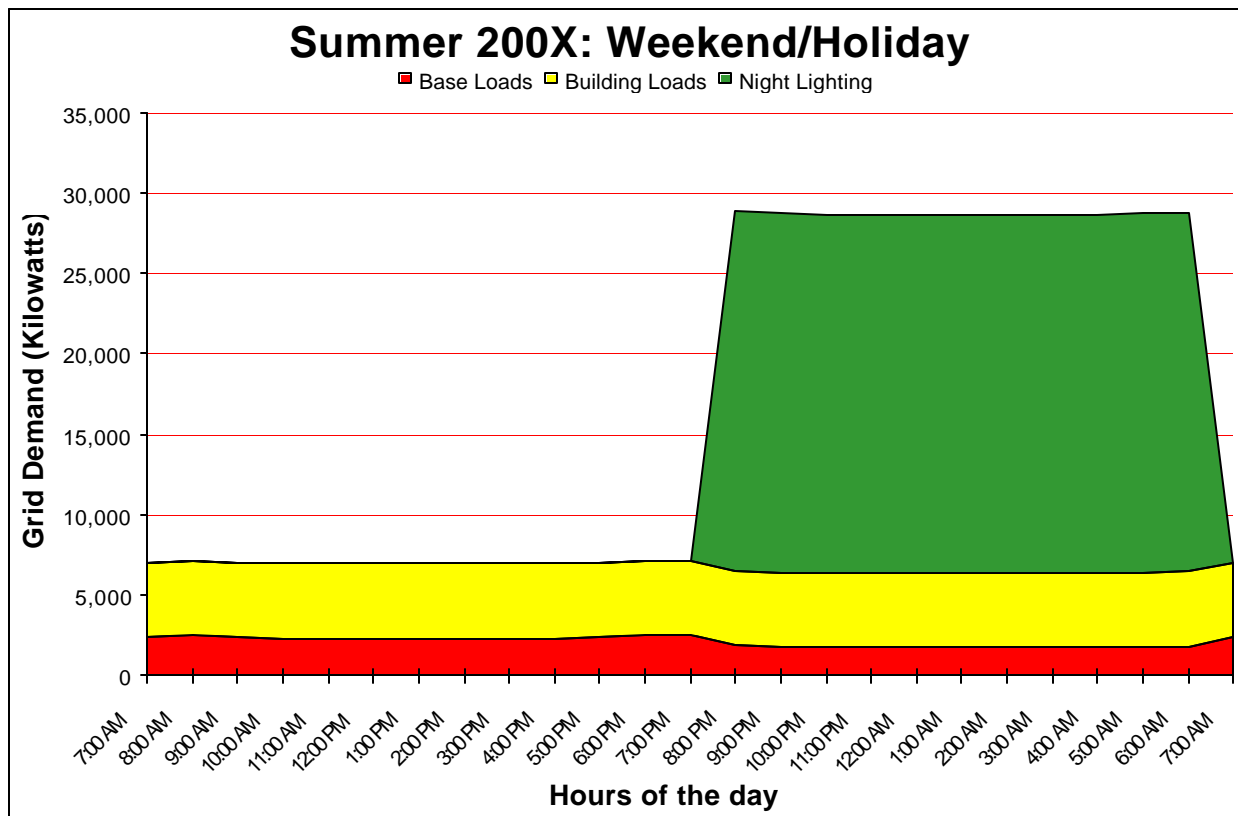


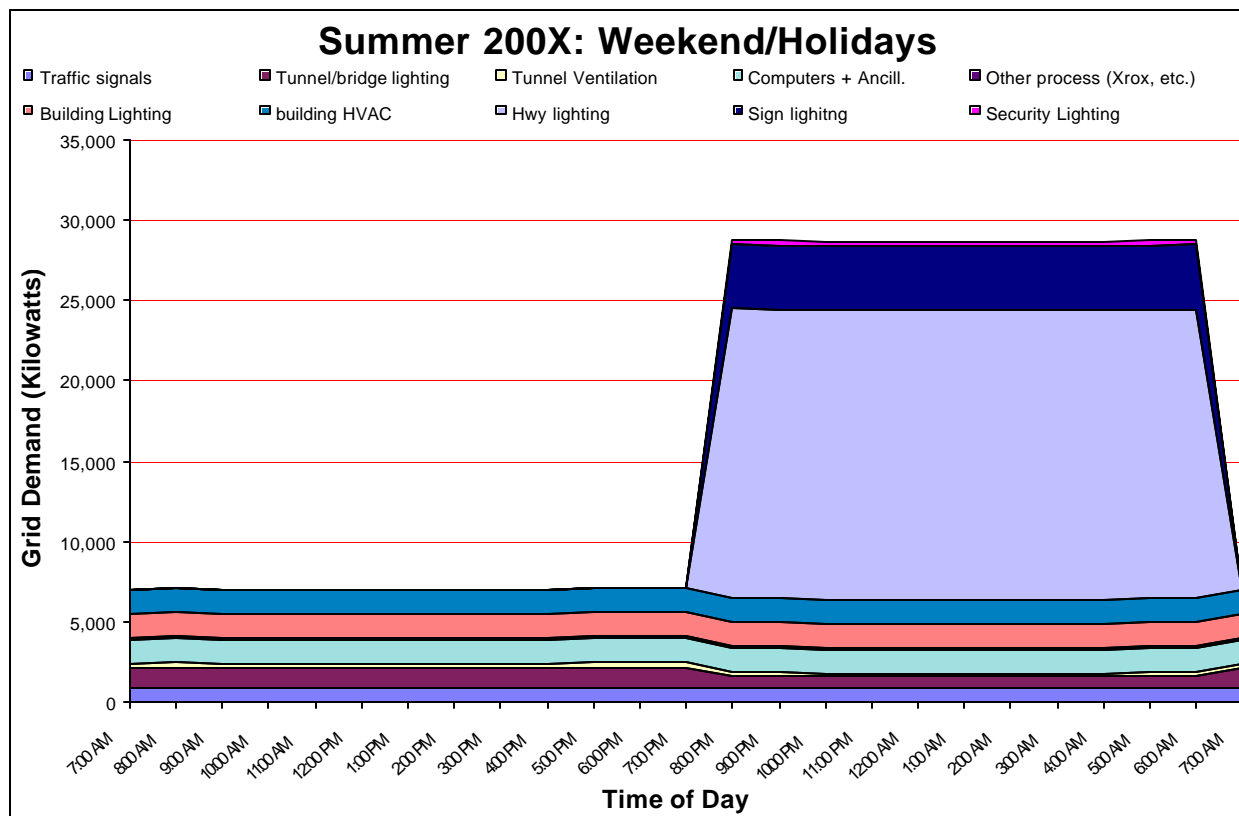


**Summer of 200X**

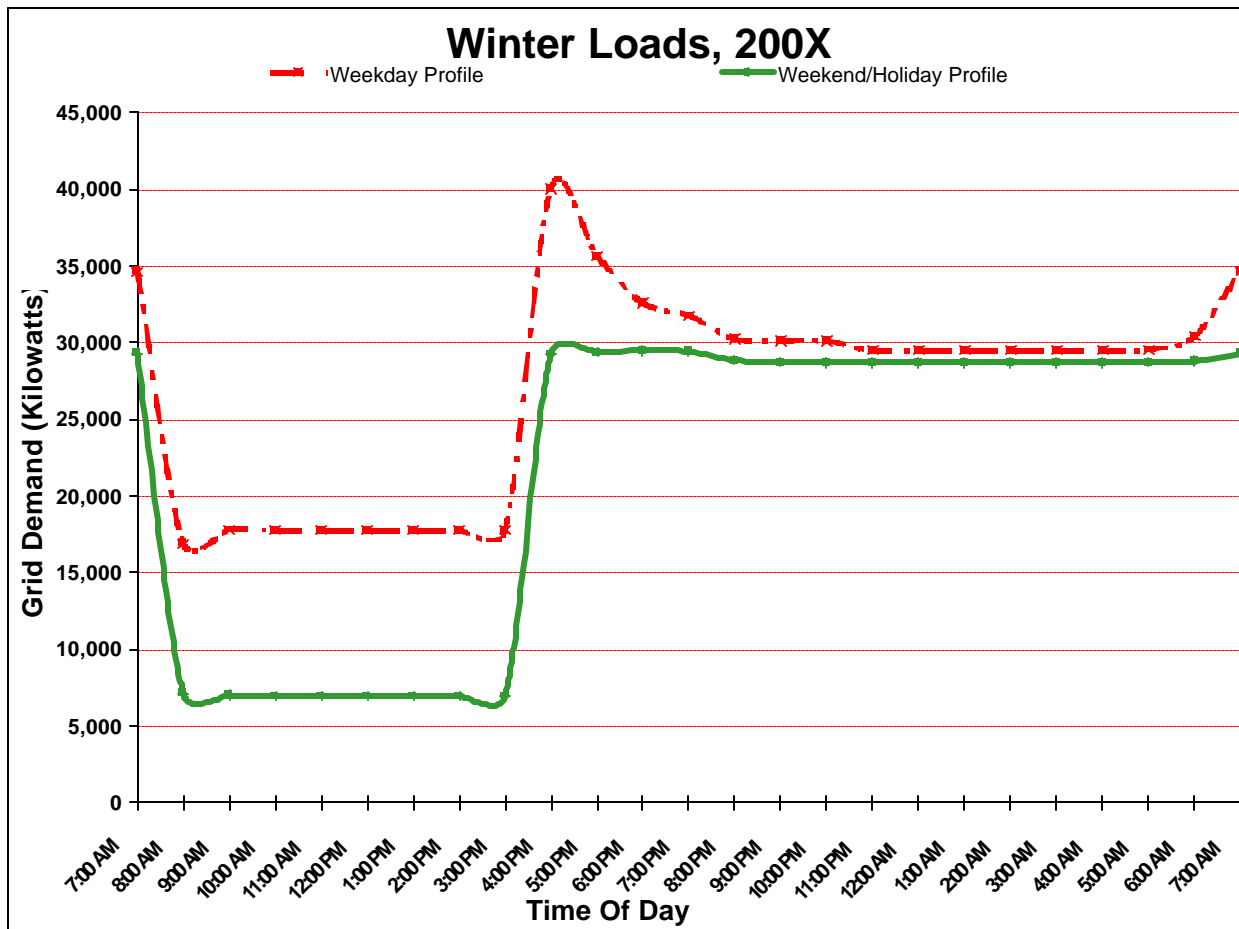


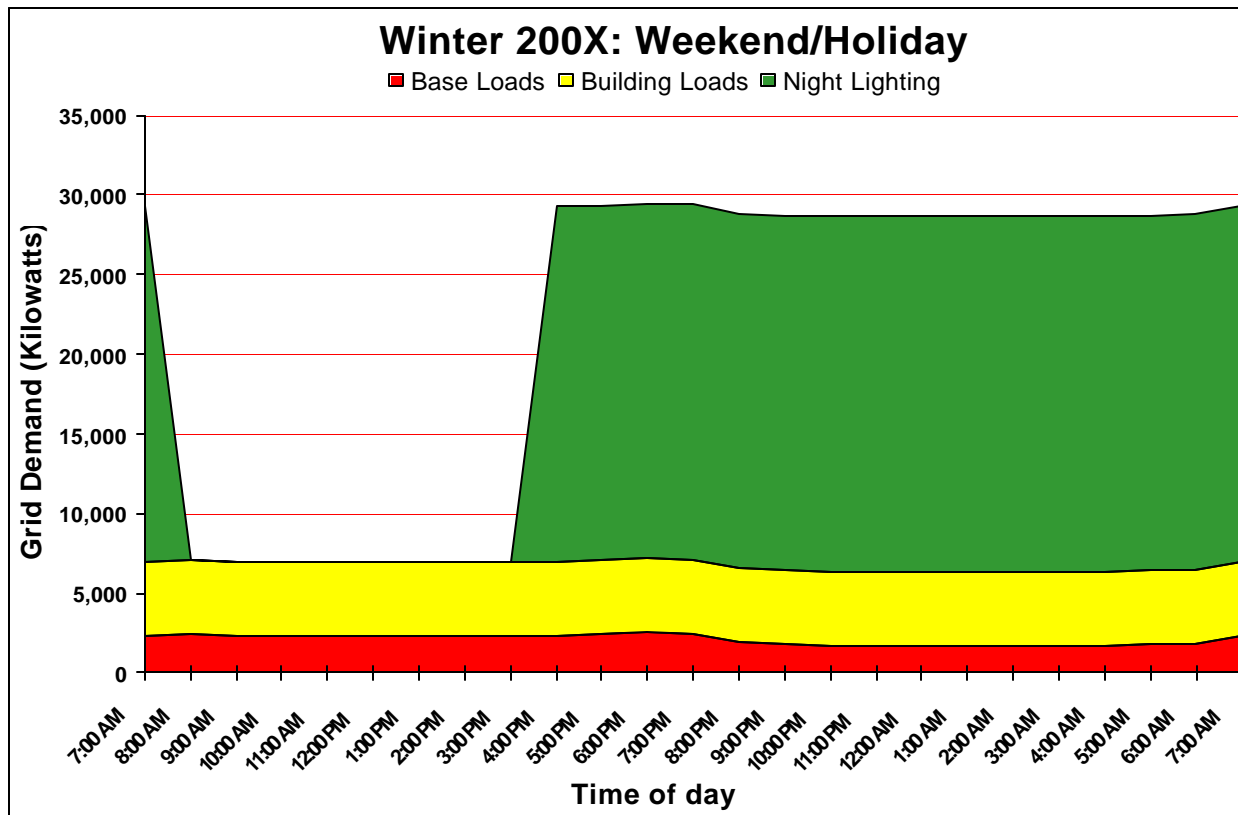
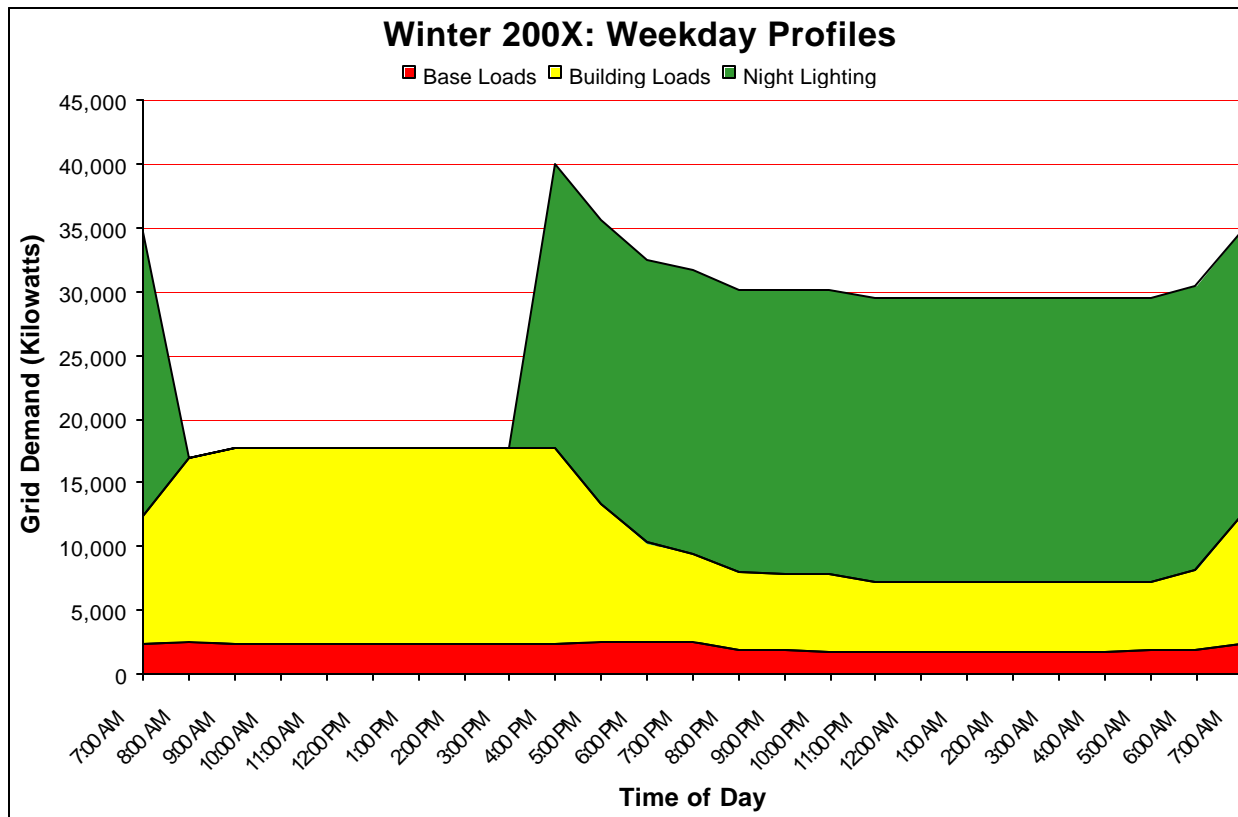


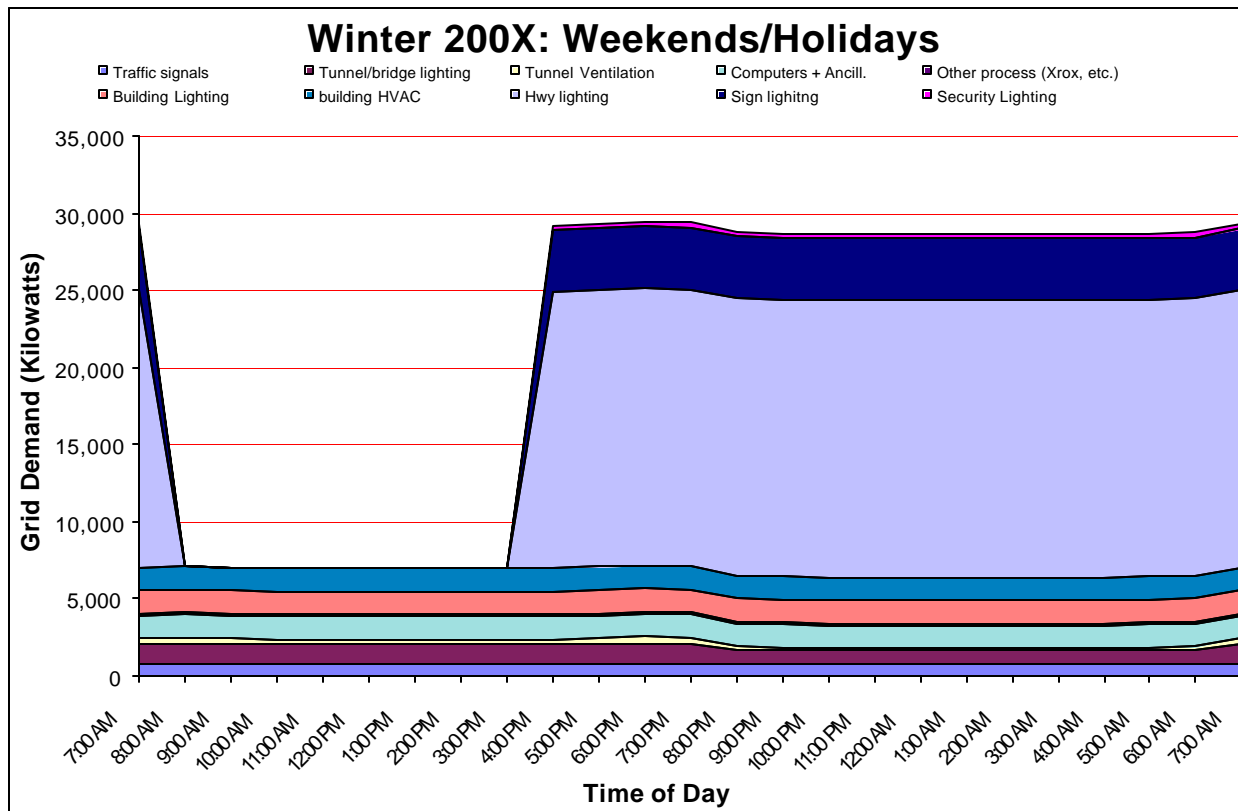
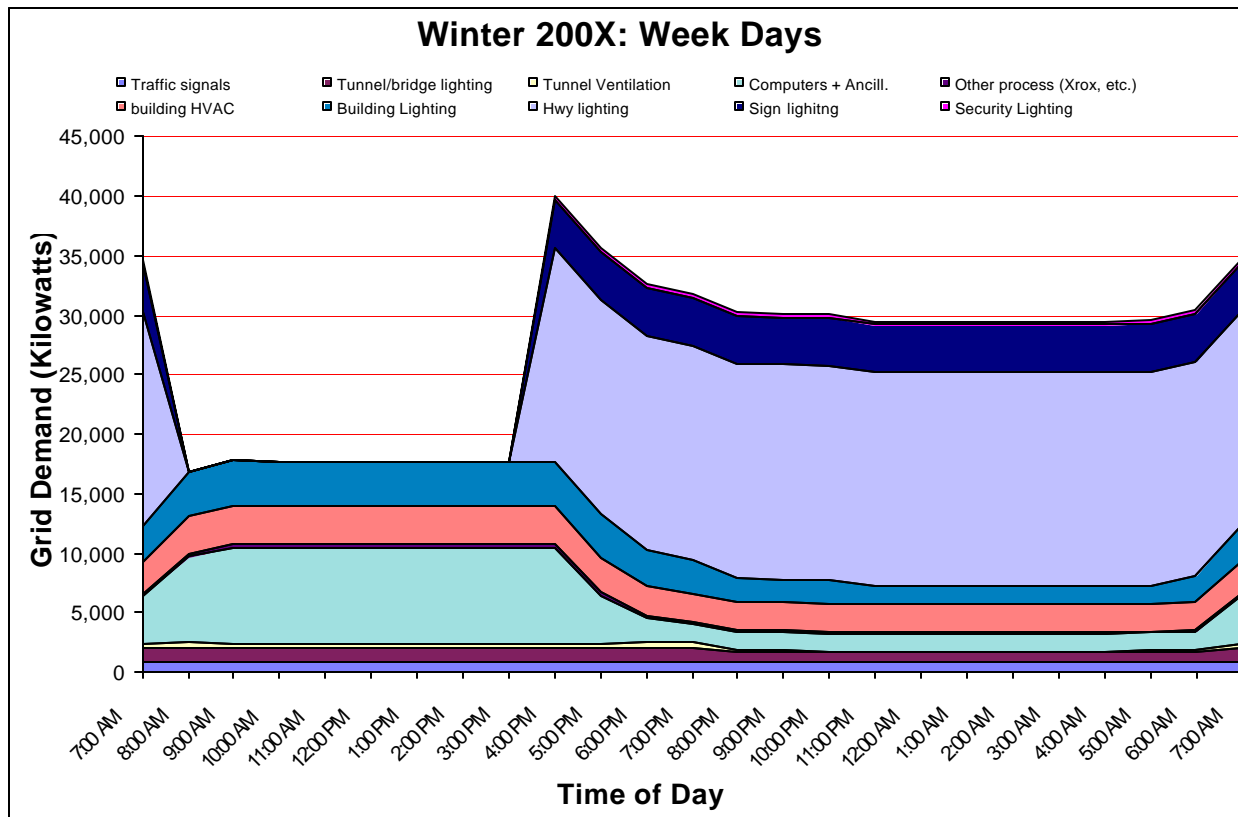




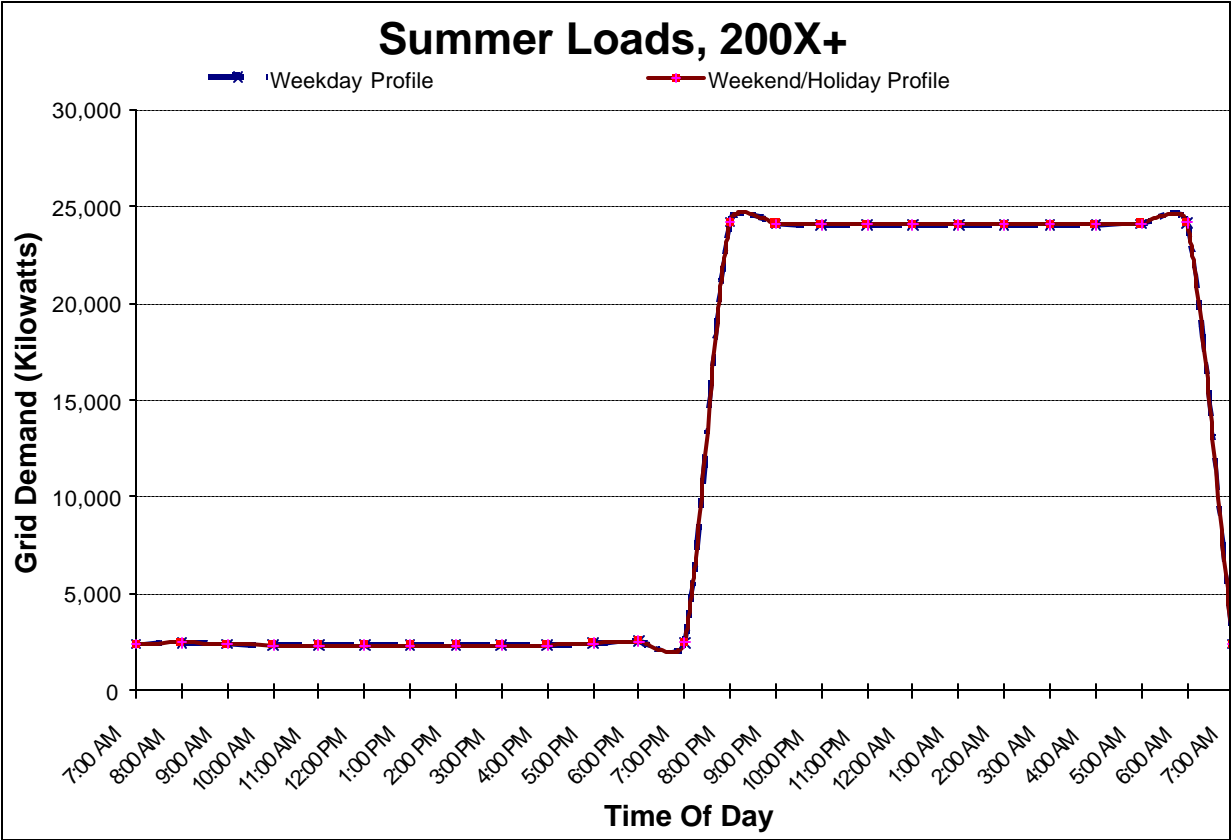
**Winter of 200X**

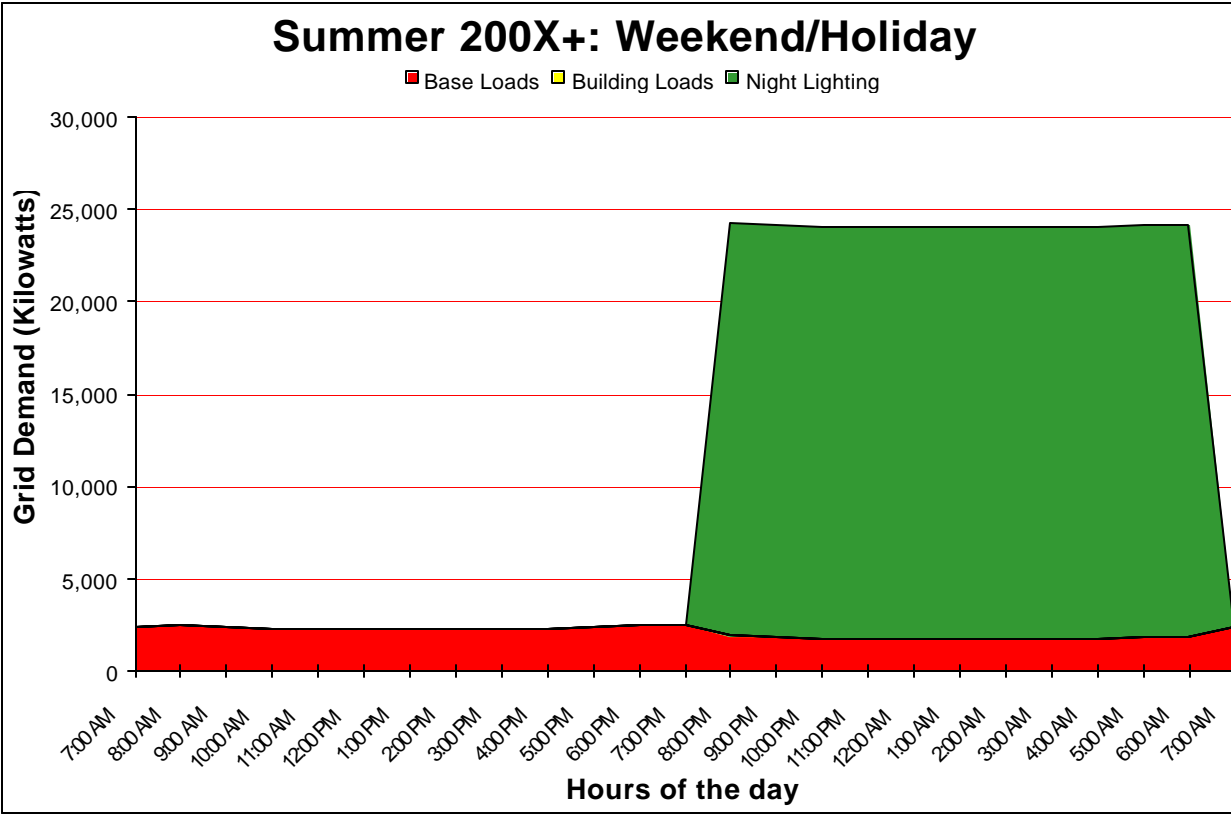
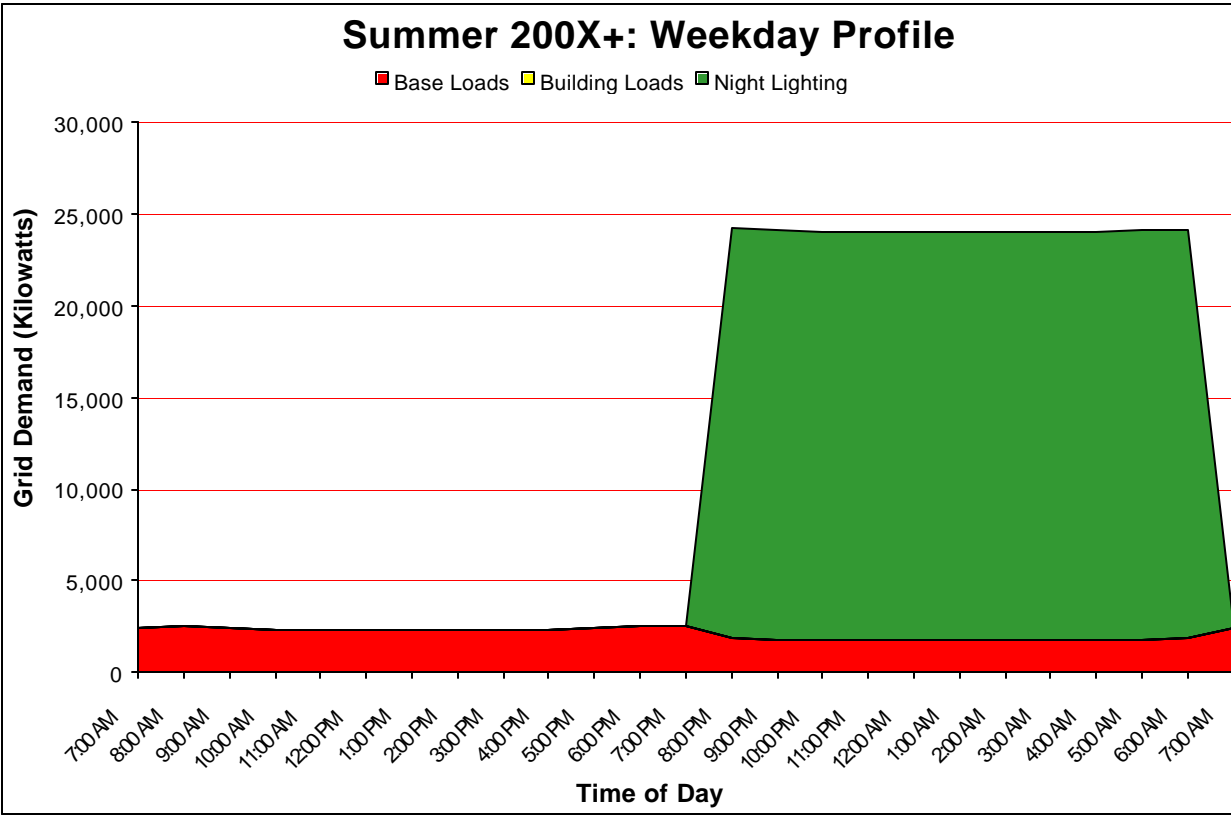




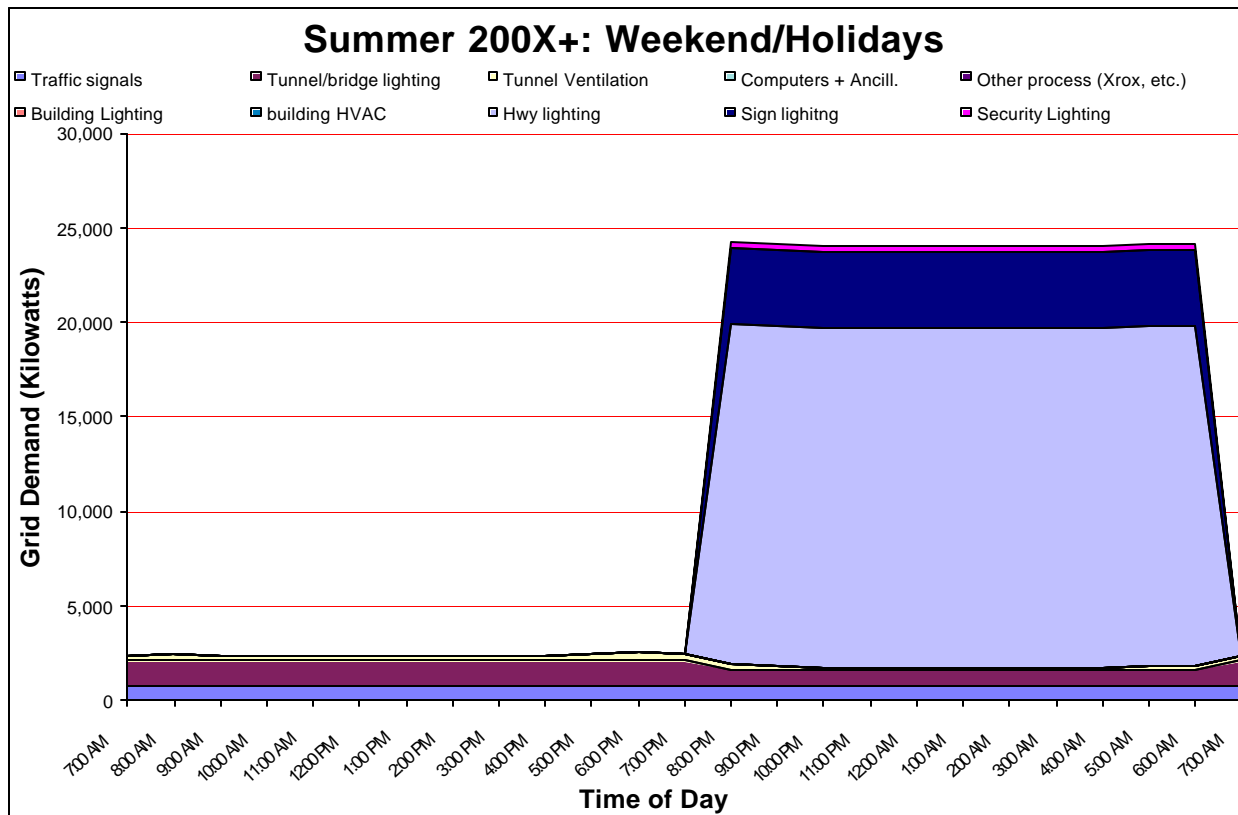
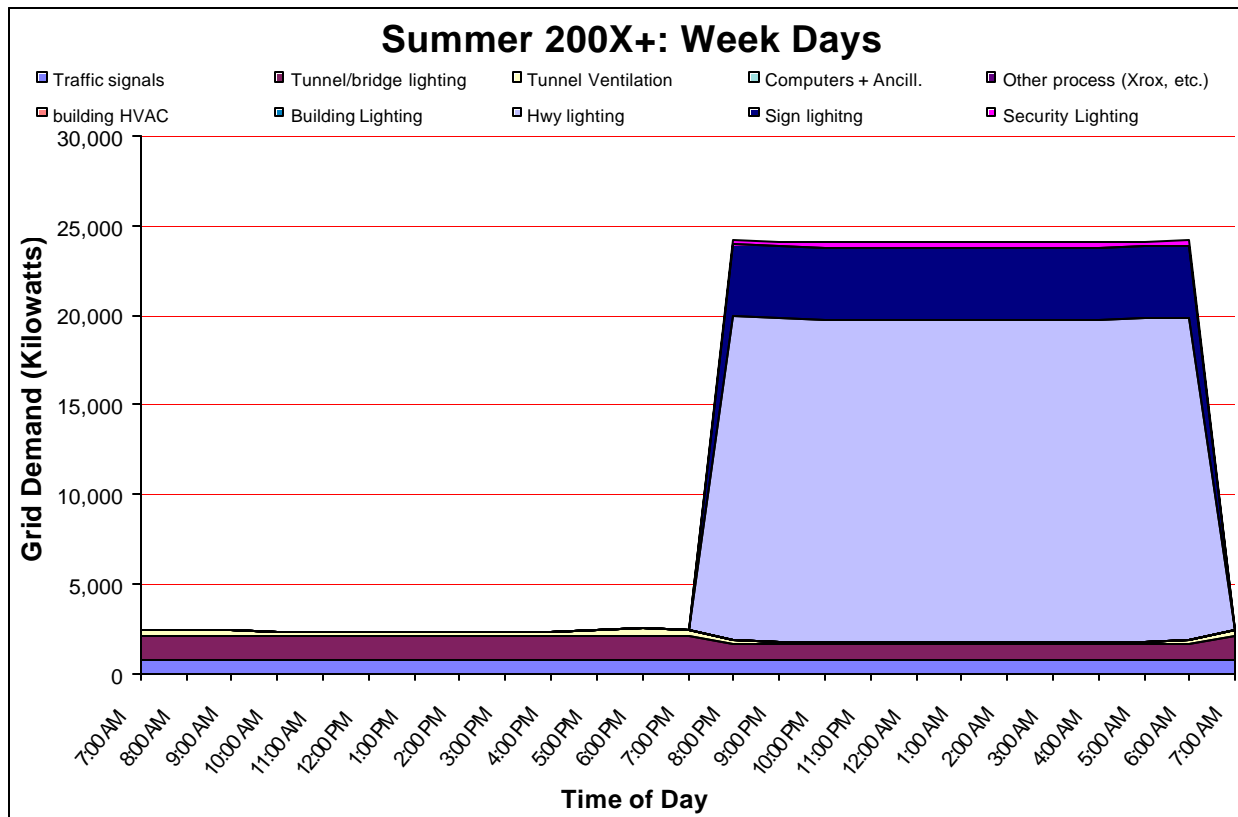


**Summer of 200X+**

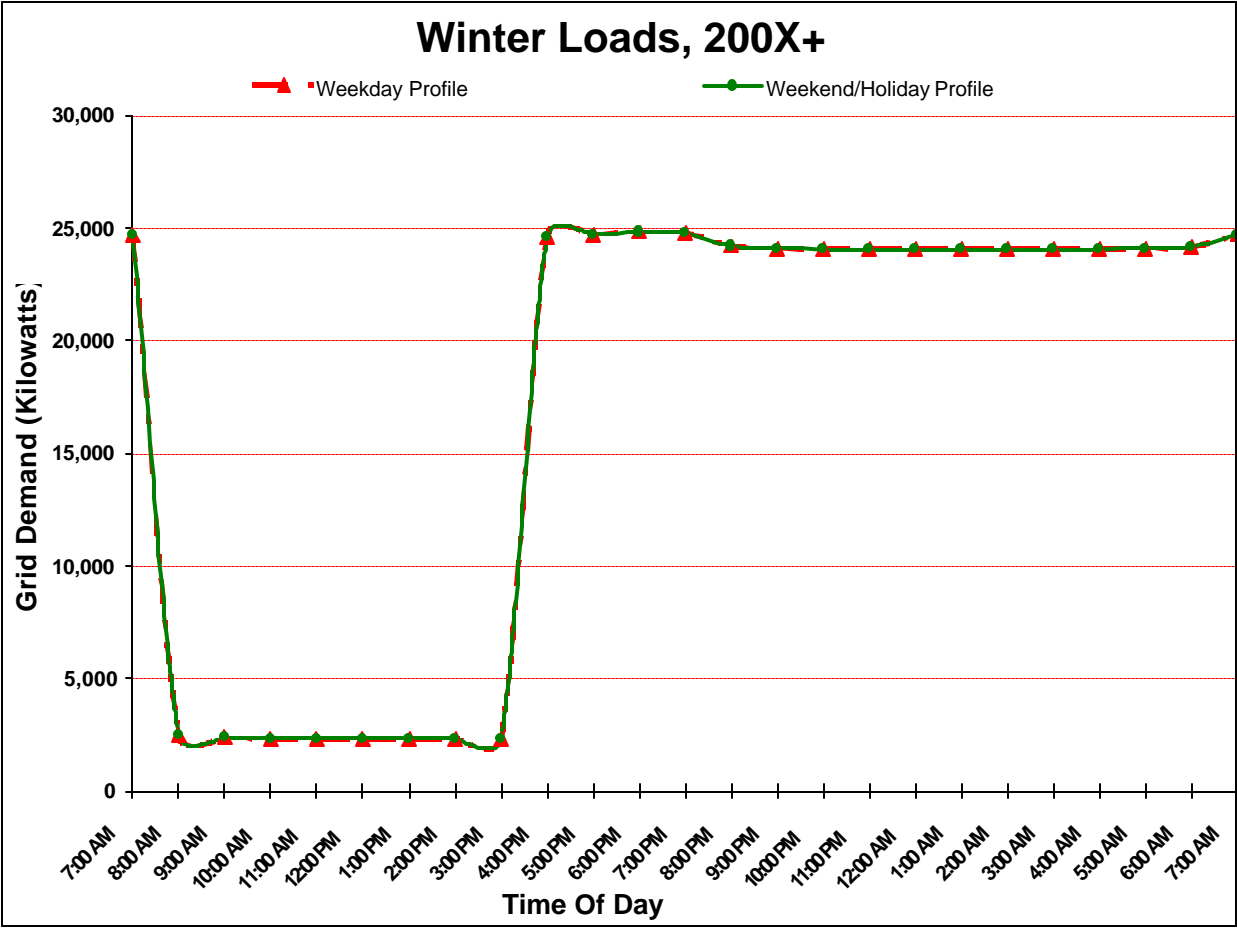


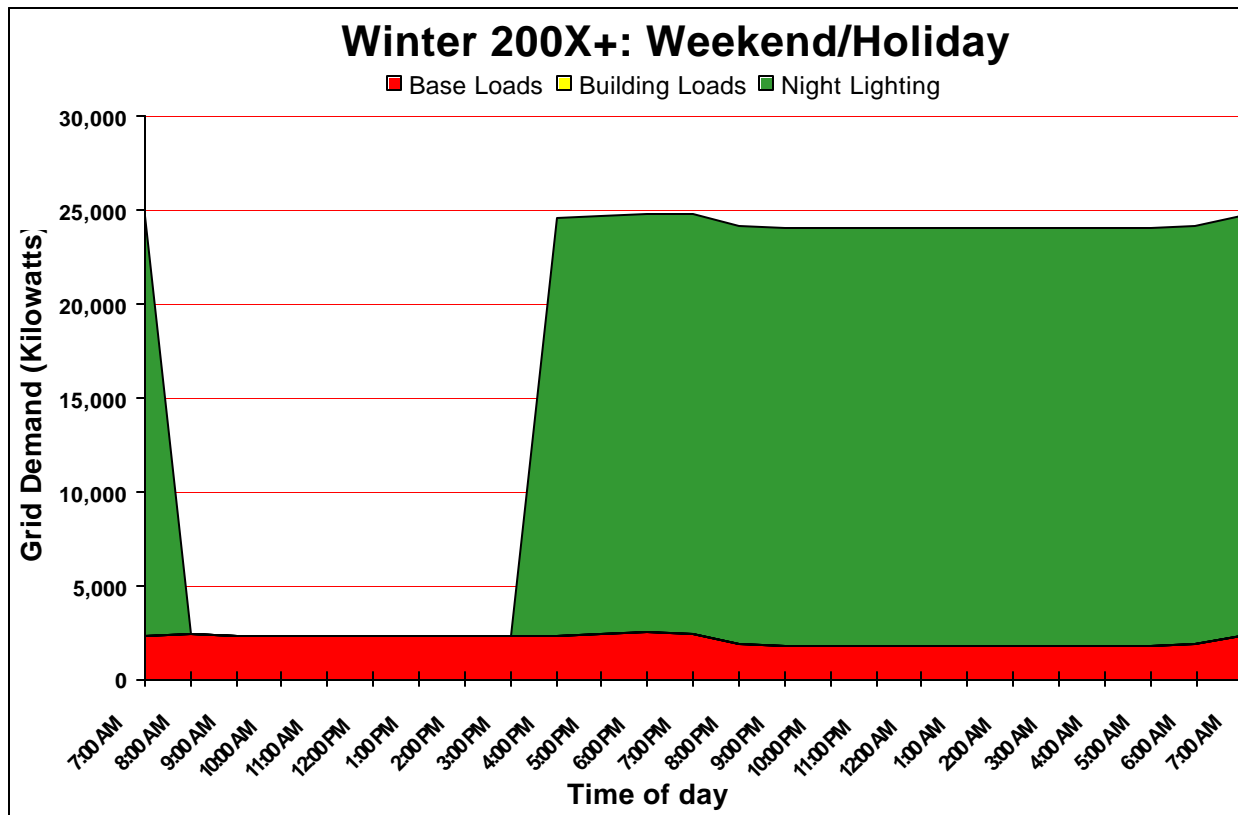
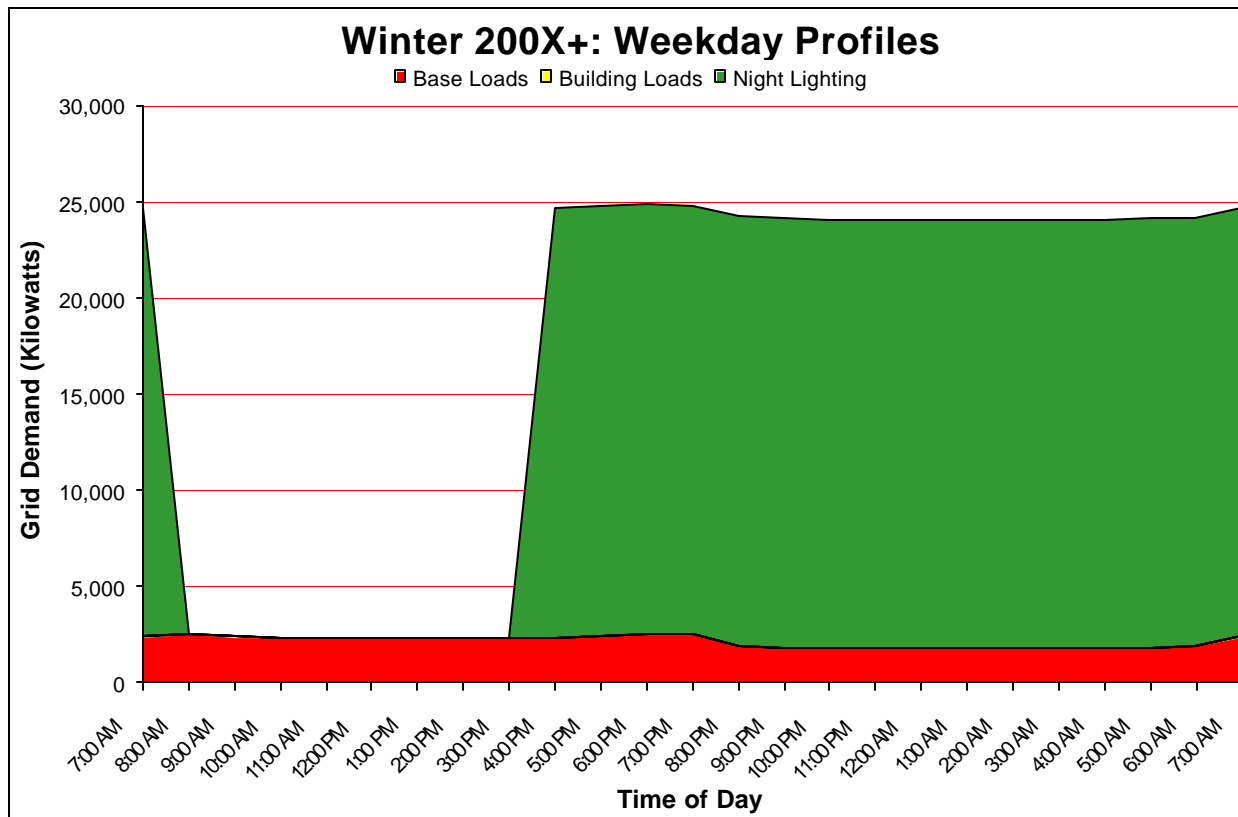


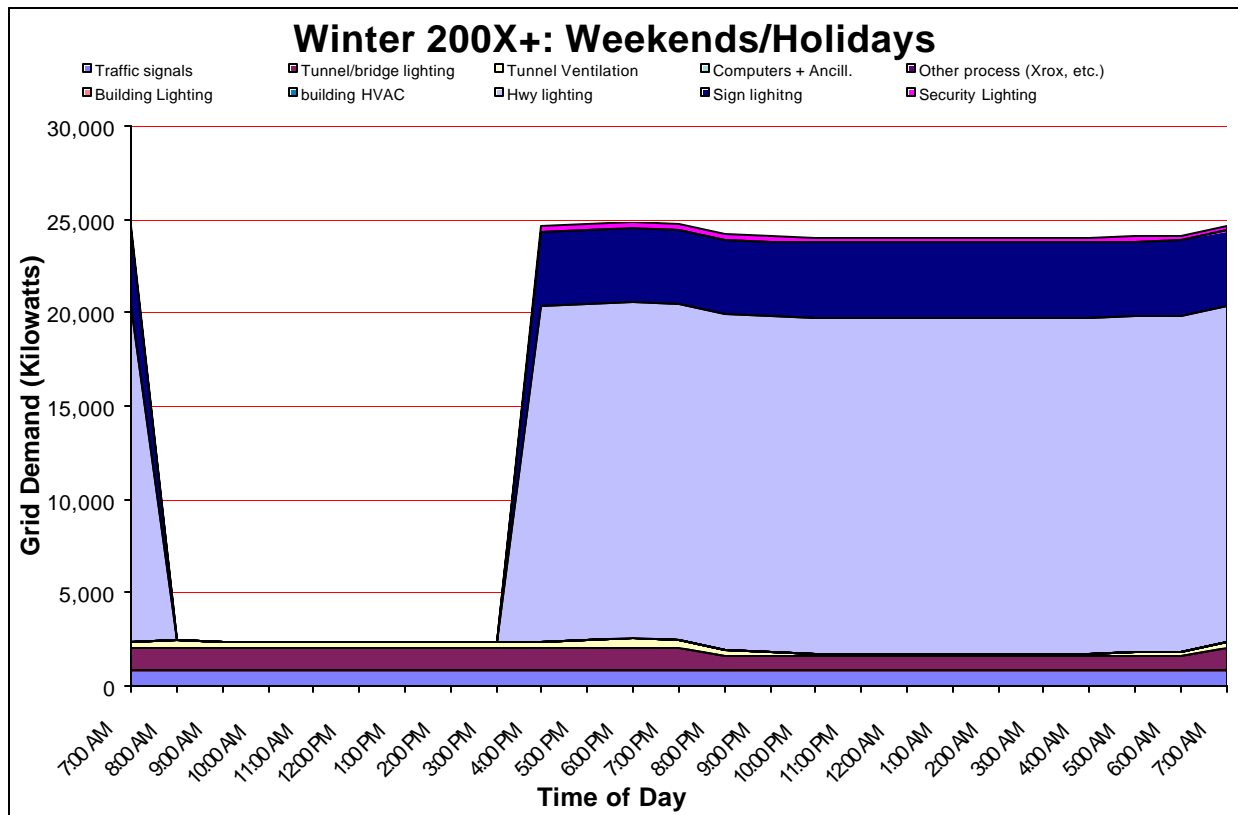
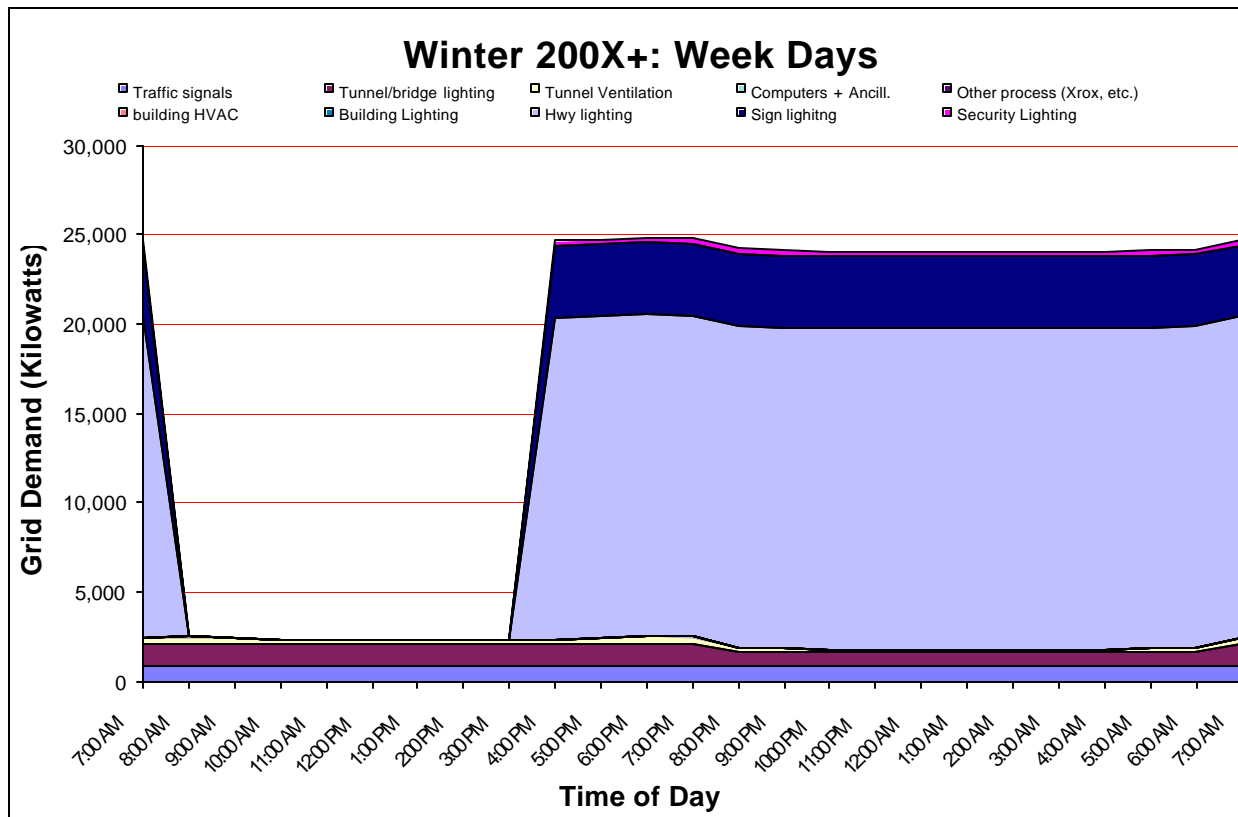




# Winter of 200X+

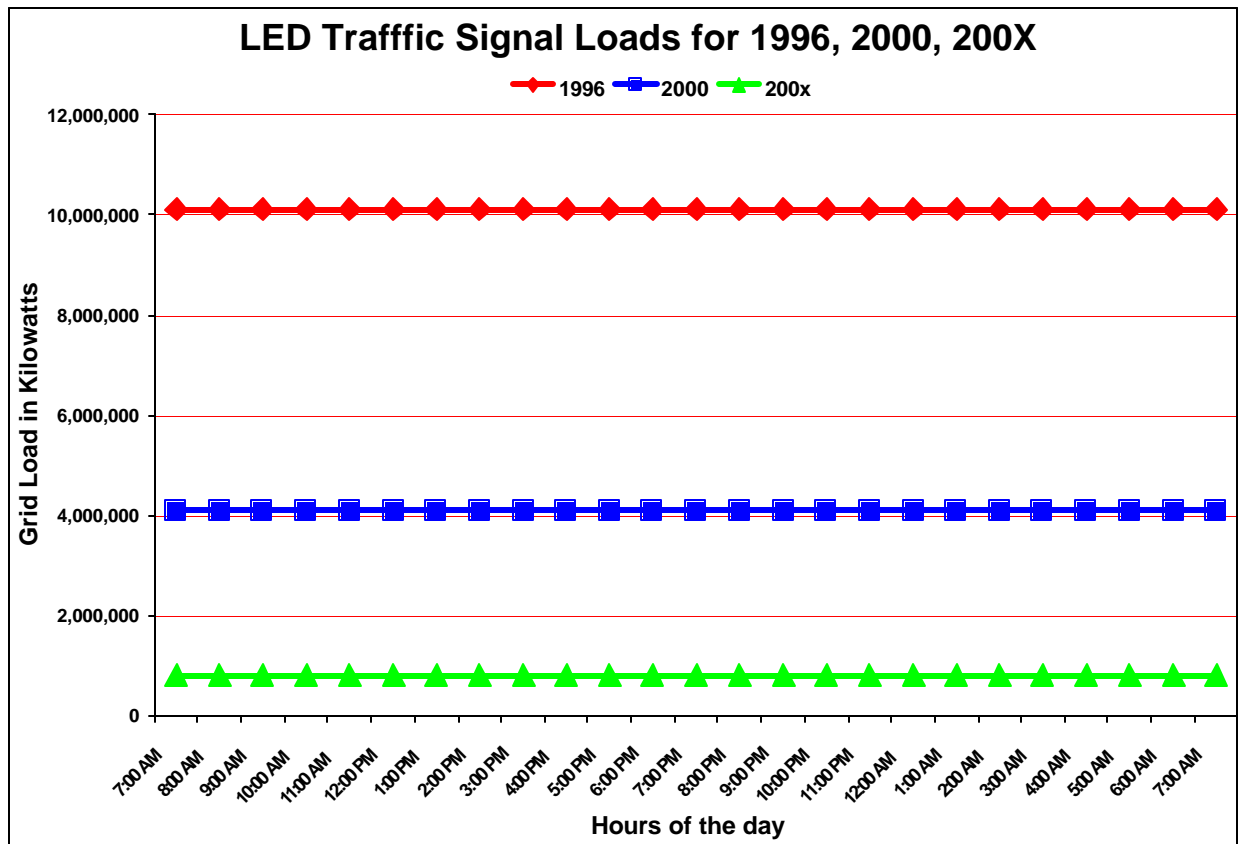




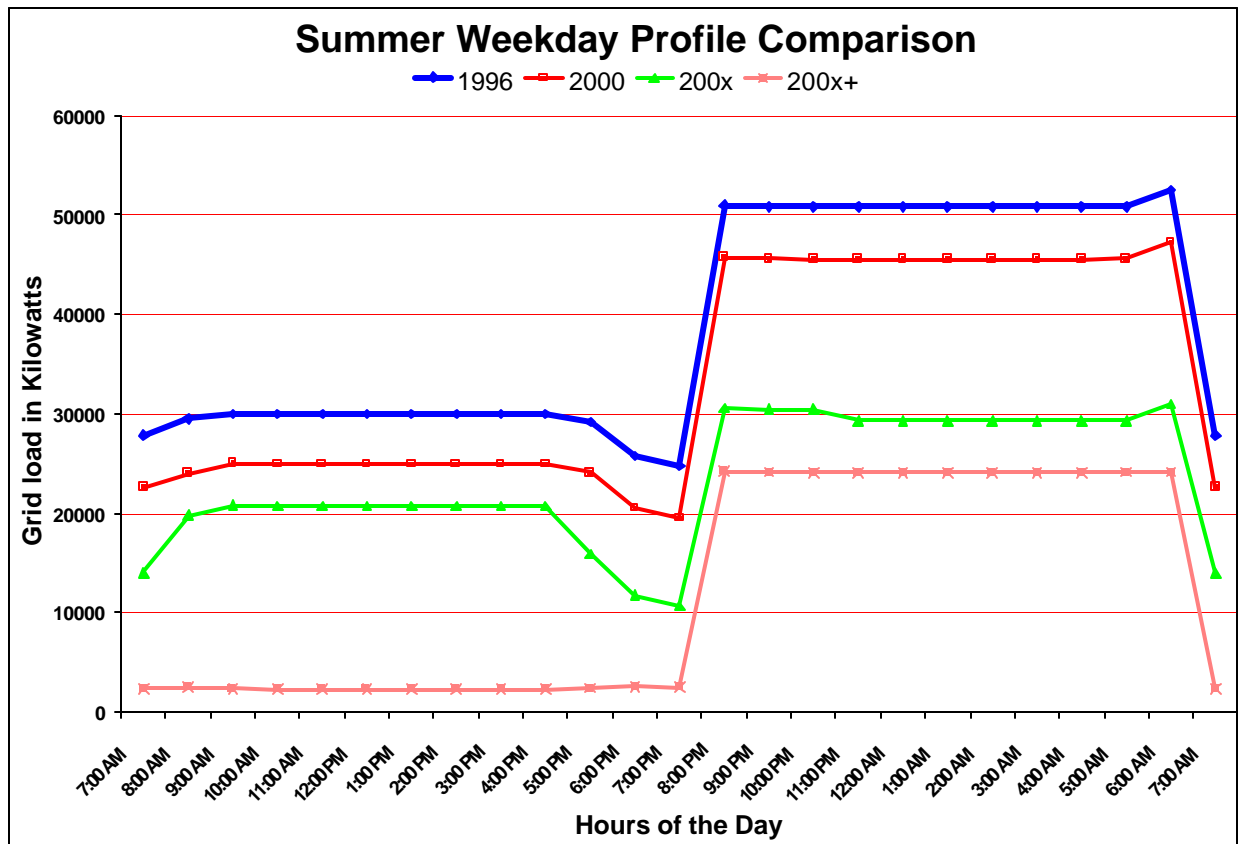


Let's compare and contrast some of the loads:

## LED Signal Impact Comparisons from 1996 to 200X



## Weekday Summer Load Comparisons For 1996, 2000, 200X, 200X+



# Selective Energy Charts For Large Facilities

## Background:

The following series of charts and related data tables include district offices in Districts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11. Sacramento based major facilities include 1120 N Street and the Div. of Equipment, METS Lab, and the Warehouse complexes. Leased facilities at Shields Ave in Fresno and Farmers' Market III in Sacramento are included in this section because the Department pays the utility costs at those facilities. (District 12's office is not included in this report because the District Office is located in a leased facility where the utility costs are included as a fixed fee per square foot of rental space. Very typical for leased space contracts.)

## Types of Charts:

For each facility, there will be three charts and data tables, unless otherwise noted:

- Monthly Electricity Consumption: This chart plots the total number of kilowatt-hours of electricity consumed by the facility in a given monthly utility billing cycle.
- Monthly Electrical Grid Demand: This chart plots the rate of electrical demand needed by the facility to supply peak electrical needs during any given monthly utility billing cycle. This peak demand figure is typically determined during the utility's period of peak customer usage. Peak demand normally occurs during a weekday afternoon on the hottest day of any given monthly utility billing cycle.
- Monthly Natural Gas Consumption: This chart plots the total number of therms of natural gas consumed by the facility in a given monthly utility billing cycle.

## Patterns to look for:

There are three basic patterns to look for when examining the following energy charts:

- Seasonal swings: In most departmental facilities, electricity has its maximum usage during the "cooling season", and natural gas consumption is at its maximum usage during the "heating season." If the graph curve repeats itself from year to year, then the chart's curve should not vary in its basic shape. Since no year's weather is the same as any other year, the chart's patterns should not vary much. Internal heat loads in a facility may modify the impact of weather on the annual consumption pattern. However, if no detailed energy consumption study has been conducted on the facility, then the impact of internal loads, and conservation activities may be overshadowed by changes in seasonal weather conditions.
- Billing period swings: Some utilities do not always read the utility meter every 30 days. Based upon utility bill analysis, billing periods may vary from 26 to 37 days. Another reason to view monthly utility bills in proper perspective. In some rare cases (mostly natural gas meter reading) periods of 60 to 90 days between meter readings may occur, especially during summer months where low gas consumption occurs. Where these gaps occur, the choice is to either average the consumption over that period of time, or let the consumption spike occur. In the following charts, the averaging approach was used to smooth out patterns where applicable. It should be noted however, that when trying to determine the impact of conservation activities during periods where meter reading skips or the more normal plus or minus 6 day variation in billing periods, the analysis should

try to normalize the data to average daily consumption or better yet define workday and non-workday consumption patterns for a facility. This can be done manually or automatically using a well-designed facility energy management system.

- Impact of conservation efforts: The impact of energy conservation activities within a facility may or may not show up in changes to the monthly consumption patterns. Typically, on a project-by-project basis, most energy conservation measures
- **(Example:** Unless the billing periods are normalized to a 30 day billing period, the 12% normal variance billing cycles could either hide or overstate the impact of energy conservation measures that reduce normal energy consumption in the facility by 8%. If you are comparing current consumption against past years rate of consumption. The same can be true if any given month's weather is X% worse or better than a similar month in past years. It has been a past practice by departmental energy staff to track the before and after energy consumption patterns of all energy consuming devices/systems that are to be impacted by an energy conservation measure (ECM). The resulting savings for those implemented ECMs are then tracked over the expected life of the equipment/system. Tracking energy savings by project eliminates the need to track utility data at the facility in order to assure savings are occurring.)

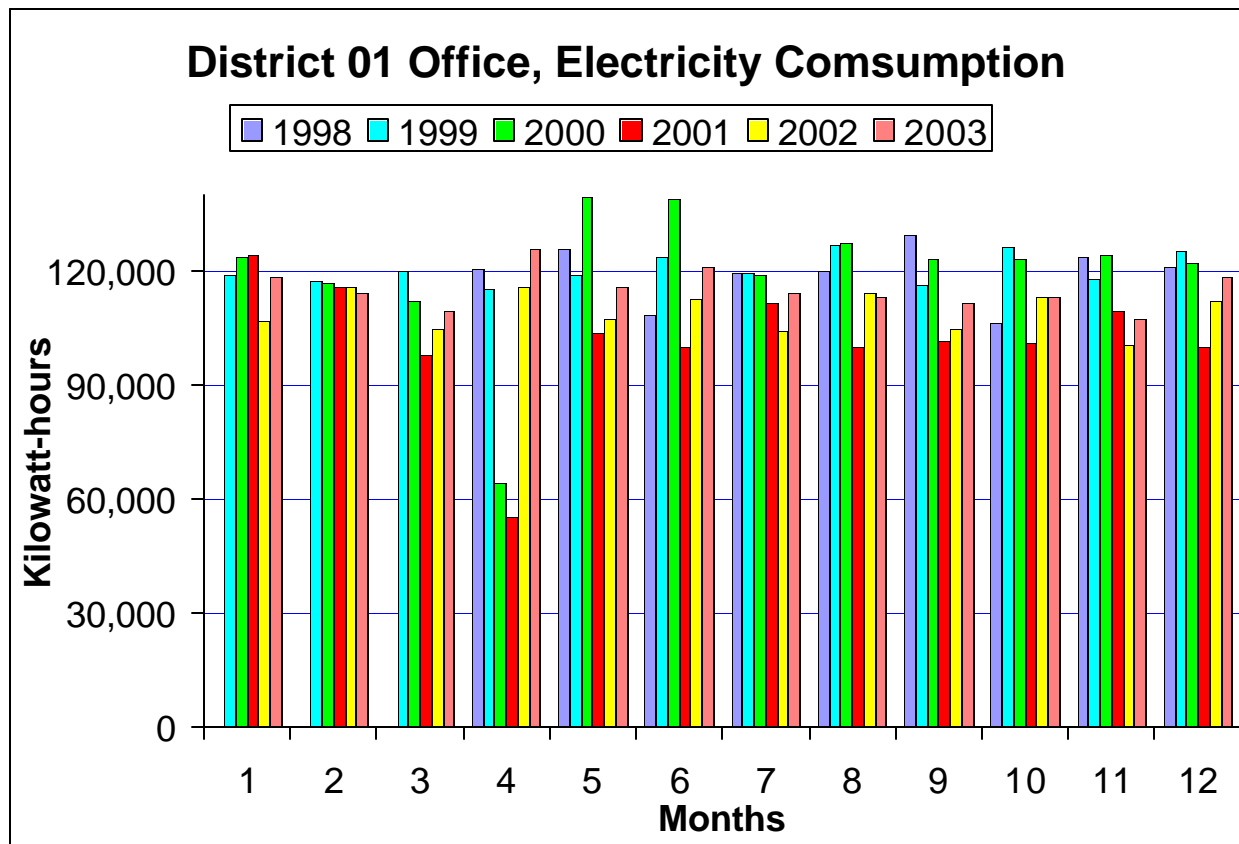
**Data sources for the various charts:**

Data collected in the following tables and resulting charts come from utility data, for the most part supplied directly from the servicing utility for each facility. In some cases, natural gas data has been supplied from the Department's "PUBS" database maintained and operated by the Utilities Accounts Payable unit within the Department's Division of Accounting. Electrical data that includes electrical demand charges (in kilowatts) came directly from utility data sources because PUBS database does not extract and store electrical demand data from processed utility bills. PUBS is a good source for account payment tracking and basic utility consumption data (i.e., kilowatt-hours, therms of natural gas, expended funds.)

On page 83, the reader will find charting for statewide totals for the 17 district and HQ facilities documented in pages 49 through 80. Since some of the facilities do not have historical data for 1998 and 1999, the charting starts in Calendar Year 2000. Interested parties can compare individual facility profiles with the average profiles for the 17 facilities.

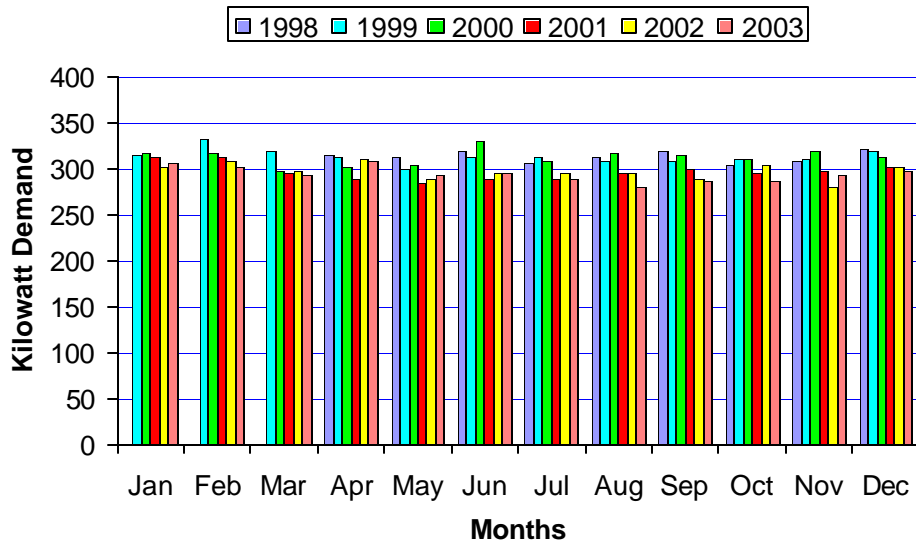


District 01 District Office:  
1656 Union St.  
Eureka, CA 95501



Monthly Kilowatt-Hour Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998				120,254	125,726	108,370	119,195	119,693	129,263	106,000	123,627	120,852
1999	118,770	117,365	119,965	115,208	118,947	123,748	119,334	126,702	115,978	126,442	117,761	125,411
2000	123,691	116,742	112,225	64,050	139,153	138,743	118,973	127,306	123,337	123,006	123,890	122,098
2001	124,206	115,568	97,787	55,282	103,706	100,025	111,390	100,129	101,726	100,963	109,457	99,898
2002	106,824	115,697	104,449	115,916	107,533	112,657	103,973	113,859	104,442	113,052	100,277	111,837
2003	118,365	114,281	109,569	125,600	115,950	120,775	114,029	113,168	111,726	112,889	107,100	118,113

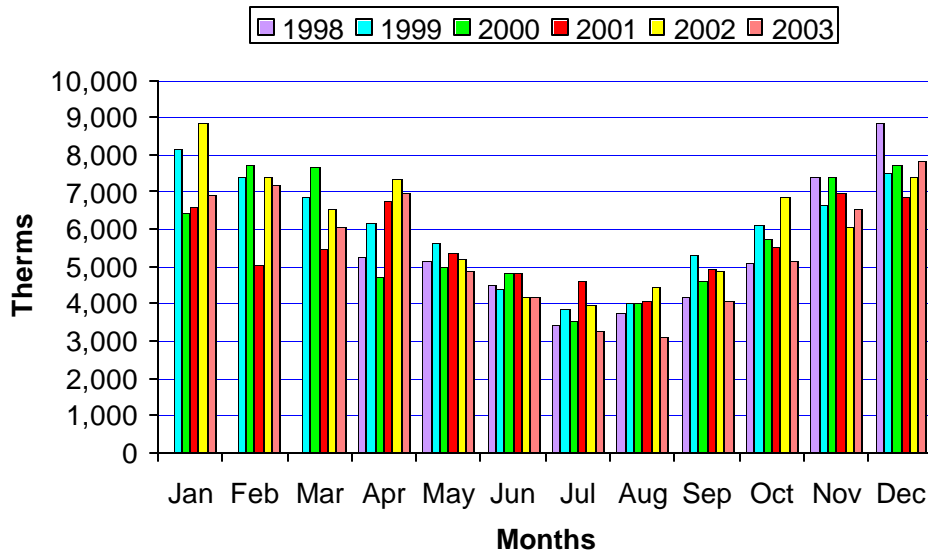
### District 01 Office, Electrical Demand



Monthly Electric Demand in Kilowatts

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	0	0	0	315	314	319	306	314	320	304	308	322
1999	316	334	321	313	301	314	314	309	310	311	312	321
2000	318	318	298	302	304	332	310	318	316	312	319	313
2001	313	314	297	289	286	289	290	296	301	295	299	302
2002	302	309	298	311	289	295	295	297	289	305	281	302
2003	307	302	293	308	293	296	290	281	288	288	293	298

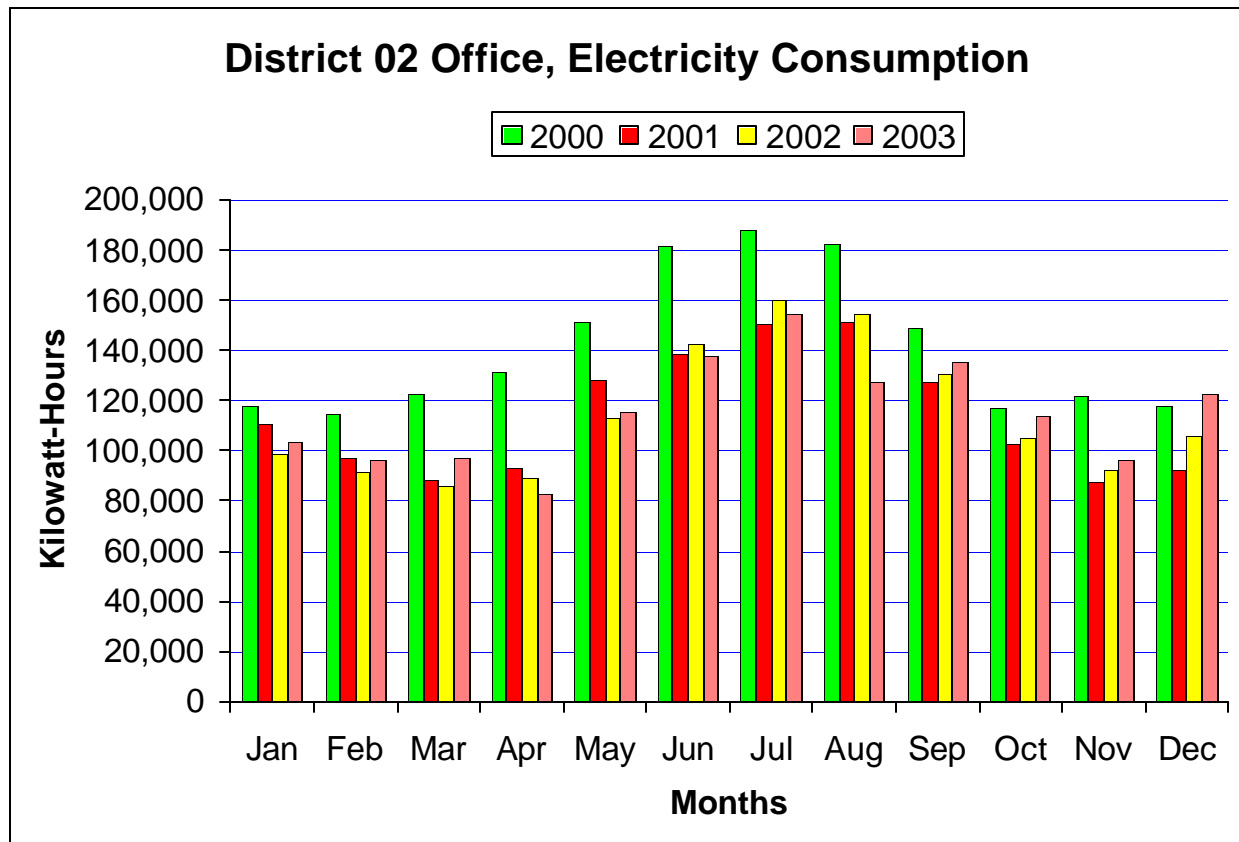
### District 01 Office, Natural Gas Consumption



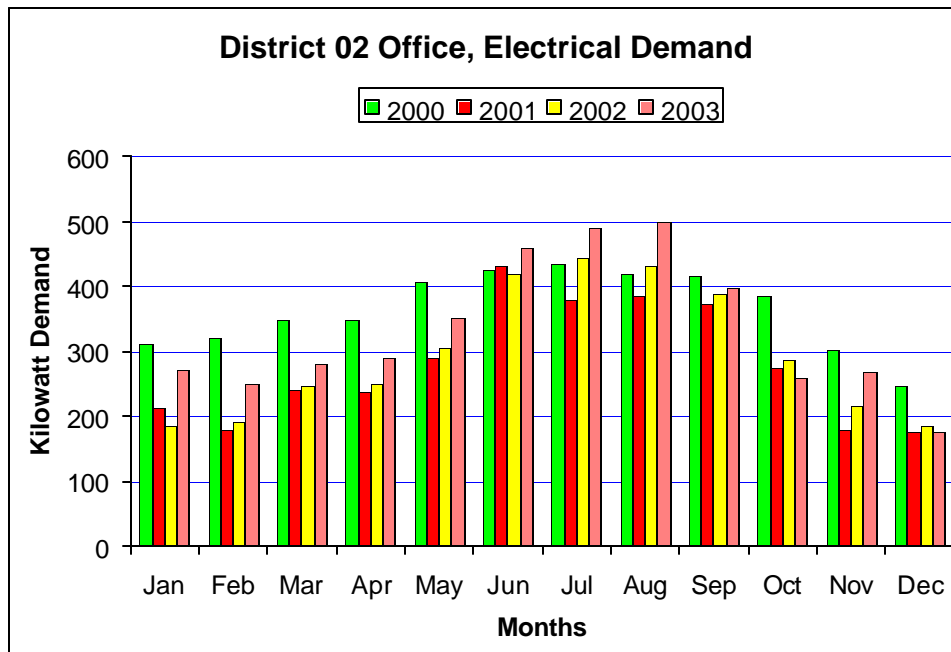
Monthly Natural Gas Consumption

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998				5,249	5,125	4,519	3,407	3,754	4,205	5,071	7,422	8,836
1999	8,169	7,376	6,864	6,189	5,639	4,393	3,838	4,022	5,300	6,116	6,666	7,506
2000	6,410	7,720	7,658	4,733	4,974	4,811	3,551	4,018	4,587	5,741	7,420	7,700
2001	6,578	5,017	5,494	6,732	5,343	4,797	4,585	4,085	4,924	5,544	6,958	6,874
2002	8,841	7,388	6,533	7,356	5,182	4,207	3,954	4,430	4,883	6,875	6,062	7,390
2003	6,927	7,191	6,077	6,992	4,894	4,184	3,256	3,133	4,079	5,171	6,564	7,805

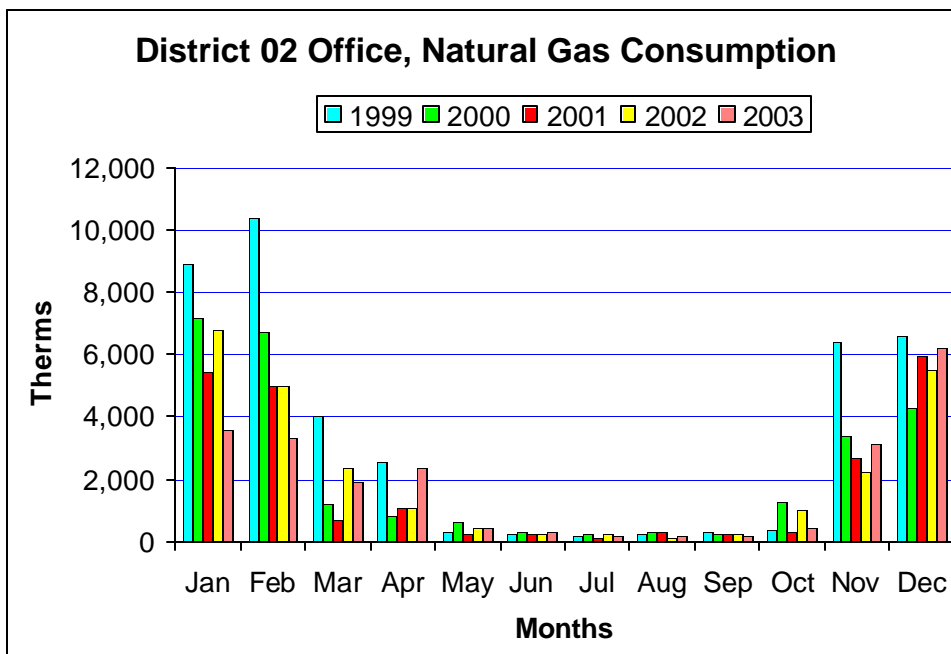
**District 02 District Office:**  
 1657 Riverside Drive,  
 Redding, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	118,000	115,000	122,240	131,520	151,520	181,480	188,040	182,200	149,040	117,280	122,200	117,840
2001	110,520	97,080	88,560	93,320	128,360	138,760	150,160	151,563	127,160	102,320	87,280	92,480
2002	98,840	91,280	85,880	89,160	113,280	142,200	160,000	154,720	130,760	104,920	92,480	105,520
2003	103,600	96,280	96,800	83,040	115,680	137,840	154,760	127,040	134,920	113,520	96,520	122,360



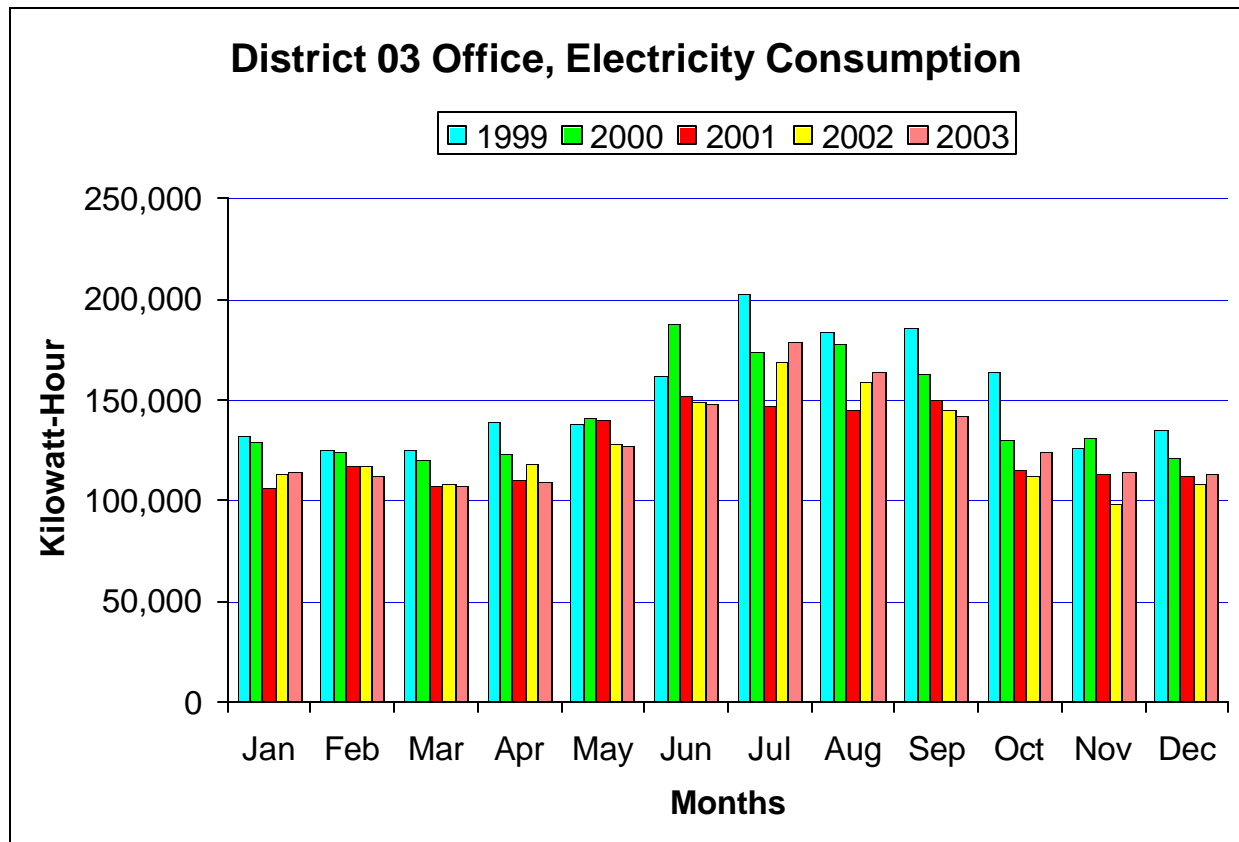
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>2000</b>	310	320	348	348	408	425	435	420	417	385	301	248
<b>2001</b>	212	180	241	237	291	433	379	385	374	275	180	175
<b>2002</b>	185	190	246	250	305	420	444	432	388	287	215	186
<b>2003</b>	271	249	281	290	350	459	490	499	398	258	267	175



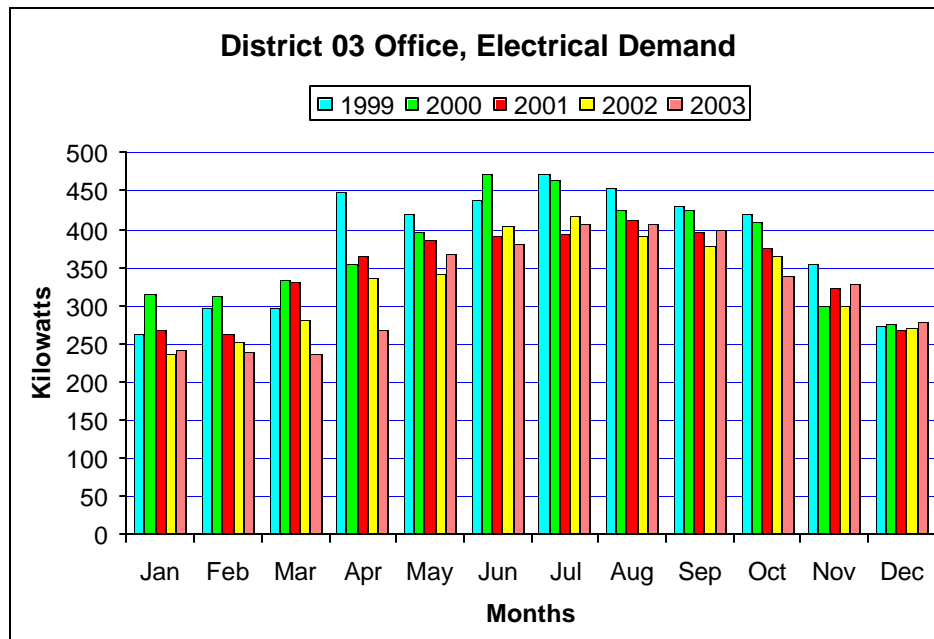
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	8,875	10,372	4,050	2,516	304	226	188	232	296	388	6,387	6,562
<b>2000</b>	7,184	6,749	1,224	845	622	273	256	332	251	1,242	3,357	4,275
<b>2001</b>	5,457	4,963	709	1,067	246	254	115	334	244	298	2,690	5,948
<b>2002</b>	6,791	4,962	2,327	1,053	454	261	254	114	243	1,005	2,250	5,521
<b>2003</b>	3,545	3,291	1,931	2,357	422	285	197	194	197	456	3,107	6,235

**District 03 District Office:**

703 B Street,  
Marysville, CA

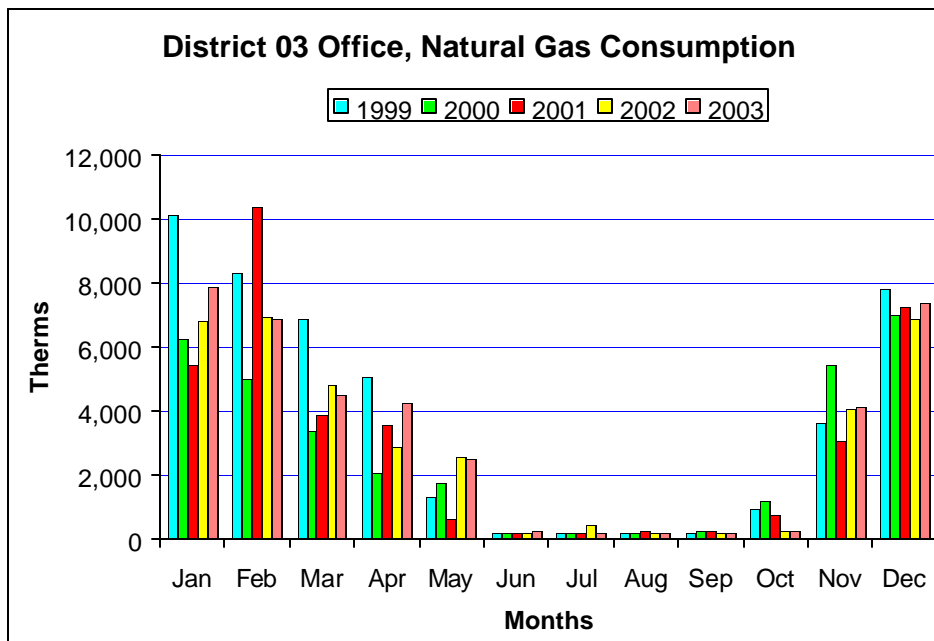


Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	132,383	125,383	125,548	138,612	138,560	161,578	202,610	183,458	185,826	163,538	126,003	135,064
2000	128,868	124,243	120,155	122,984	140,994	187,397	173,800	178,307	162,699	130,088	131,203	121,560
2001	106,156	116,670	106,768	109,972	140,343	152,261	147,325	145,496	149,568	115,597	112,930	112,527
2002	112,780	117,547	108,142	118,489	127,964	148,990	168,678	159,075	145,370	111,869	98,053	108,787
2003	114,387	112,412	107,497	109,173	127,570	147,873	178,483	163,833	142,044	123,761	114,388	112,980



**Monthly Electrical Demand**

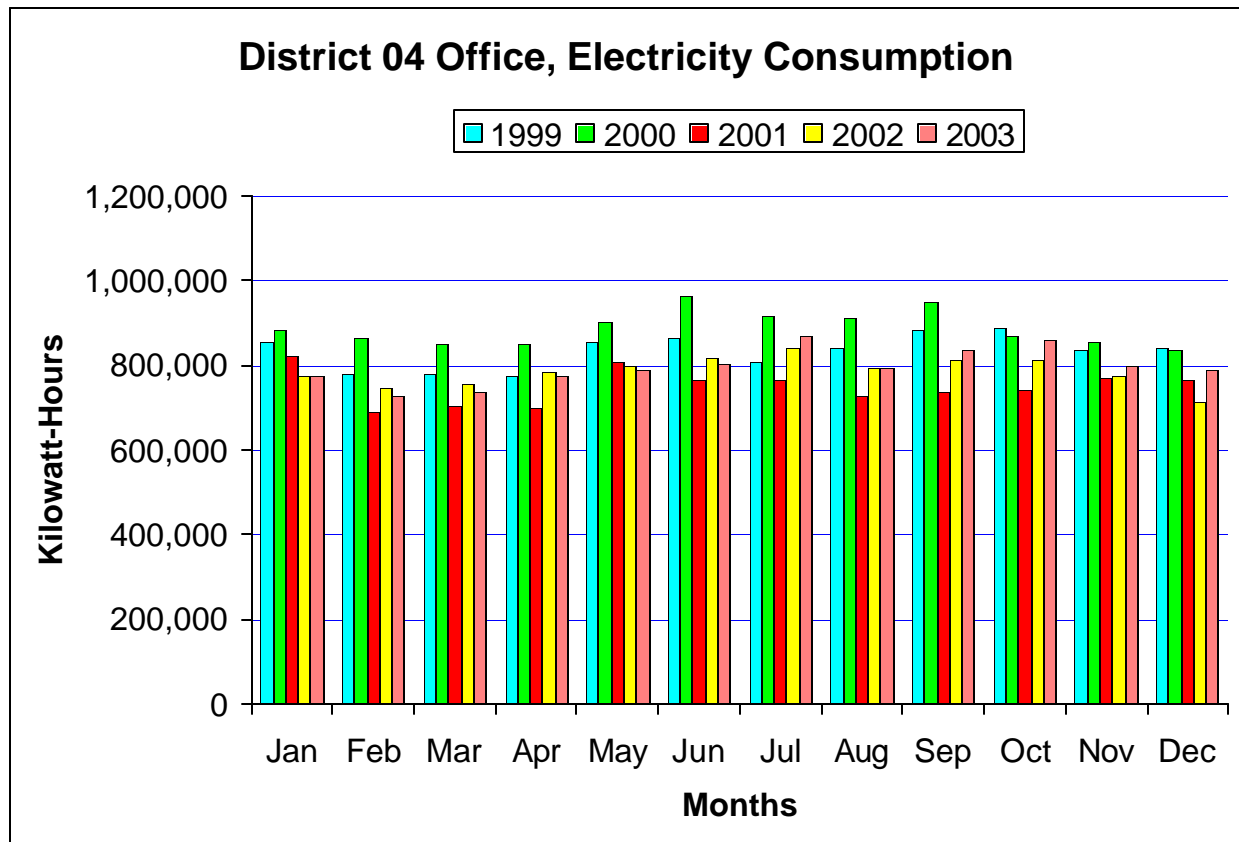
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	264	296	298	448	421	437	472	453	430	421	353	274
<b>2000</b>	315	312	334	354	395	471	464	424	426	409	299	276
<b>2001</b>	269	263	331	364	385	391	393	411	395	374	322	269
<b>2002</b>	237	252	280	337	341	405	417	392	377	365	300	270
<b>2003</b>	242	240	237	268	367	381	408	406	400	339	328	279



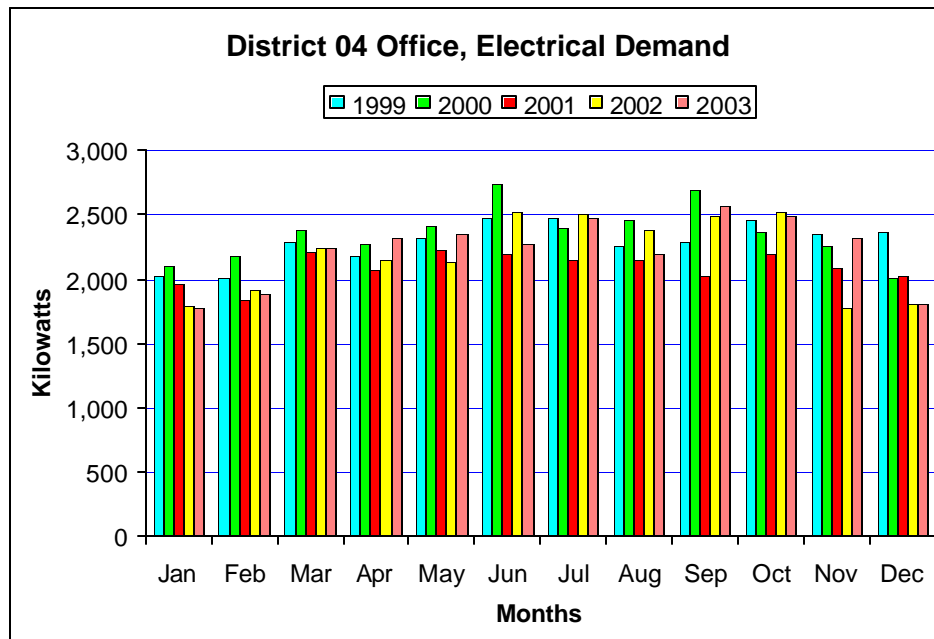
**Monthly Natural Gas Consumption**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	10,105	8,293	6,869	5,050	1,340	202	199	193	193	908	3,650	7,794
<b>2000</b>	6,223	5,009	3,402	2,072	1,772	192	190	191	227	1,171	5,449	7,017
<b>2001</b>	5,433	10,344	3,890	3,554	644	208	213	226	240	745	3,059	7,259
<b>2002</b>	6,804	6,916	4,828	2,867	2,585	186	417	191	191	221	4,061	6,849
<b>2003</b>	7,900	6,863	4,517	4,228	2,467	276	171	187	176	231	4,144	7,387

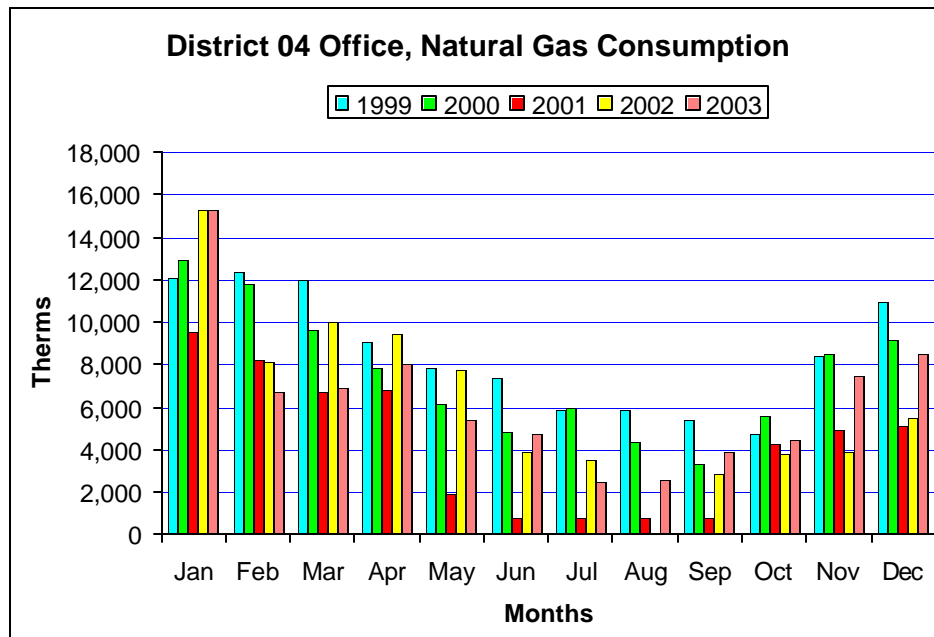
**District 04 District Office:**  
 111 Grand Ave.  
 Oakland, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	853,214	777,260	777,685	775,852	855,144	863,595	808,304	838,436	883,650	886,080	834,640	839,325
2000	884,678	862,585	850,932	851,097	900,598	961,993	914,666	912,915	949,827	869,346	853,705	834,623
2001	821,750	691,935	704,438	700,606	809,690	765,197	762,705	729,515	735,813	741,786	770,896	767,072
2002	773,249	745,145	753,280	783,973	798,398	816,651	840,464	794,321	812,758	812,692	772,719	712,233
2003	772,824	728,169	736,169	774,356	786,619	803,562	871,076	794,015	836,594	858,537	799,057	788,446



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	2,031	2,007	2,296	2,174	2,317	2,472	2,470	2,262	2,294	2,467	2,346	2,367
<b>2000</b>	2,106	2,176	2,387	2,277	2,414	2,745	2,395	2,461	2,698	2,362	2,258	2,004
<b>2001</b>	1,956	1,838	2,204	2,070	2,220	2,198	2,146	2,151	2,023	2,190	2,080	2,030
<b>2002</b>	1,798	1,919	2,244	2,145	2,138	2,527	2,512	2,376	2,493	2,518	1,780	1,800
<b>2003</b>	1,780	1,886	2,243	2,314	2,354	2,266	2,481	2,198	2,575	2,495	2,321	1,813

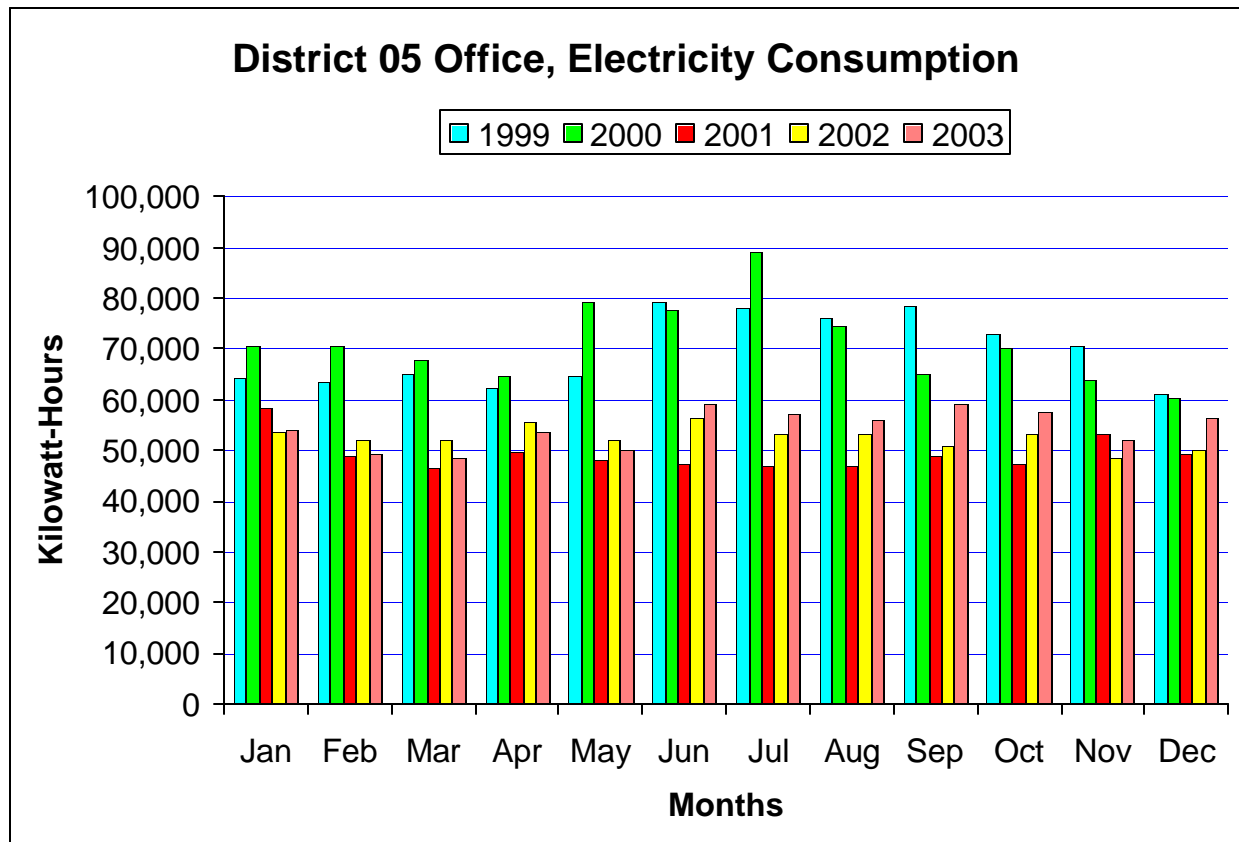


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	12,075	12,381	12,012	9,103	7,846	7,395	5,904	5,882	5,394	4,747	8,421	10,985
<b>2000</b>	12,919	11,798	9,622	7,854	6,125	4,878	6,002	4,330	3,317	5,629	8,481	9,138
<b>2001</b>	9,567	8,200	6,709	6,821	1,880	829	782	785	807	4,229	4,956	5,115
<b>2002</b>	15,253	8,086	10,037	9,409	7,795	3,887	3,533	0	2,824	3,770	3,866	5,450
<b>2003</b>	15,251	6,696	6,863	7,992	5,430	4,724	2,525	2,620	3,872	4,425	7,489	8,531



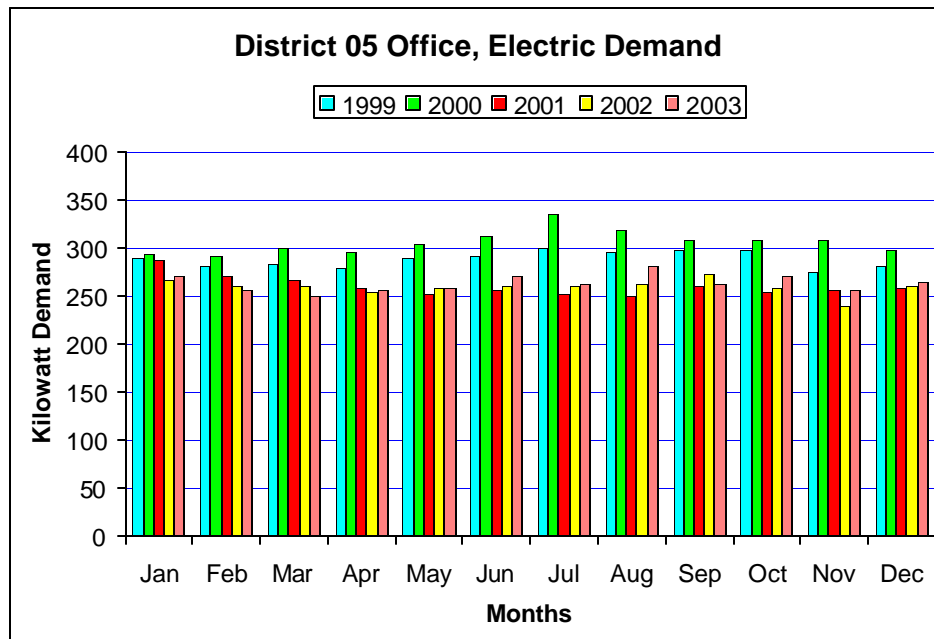
**District 05 District Office:**

50 Higuera Street  
San Luis Obispo, CA

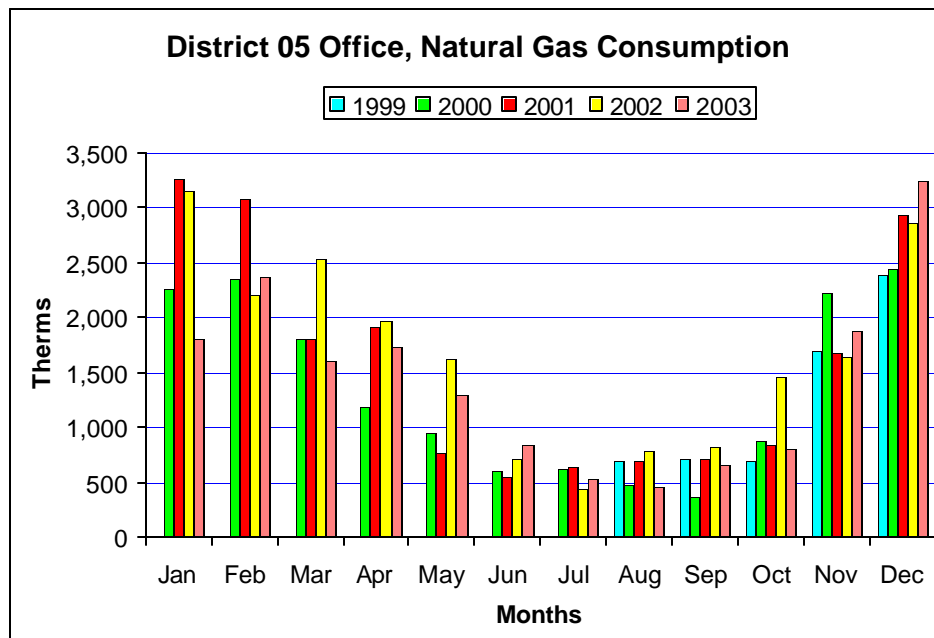


Monthly Electricity Consumption

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	64,320	63,600	65,040	62,480	64,880	79,120	78,000	75,920	78,320	72,960	70,400	60,960
2000	70,720	70,400	68,000	64,880	79,120	77,600	88,960	74,640	65,040	70,160	64,080	60,240
2001	58,480	48,800	46,560	49,760	48,240	47,520	46,720	46,800	48,880	47,440	53,120	49,280
2002	53,600	52,160	52,160	55,600	52,000	56,320	53,040	53,129	50,880	53,280	48,320	50,240
2003	54,160	49,360	48,400	53,520	50,160	59,280	57,360	56,000	59,120	57,760	52,160	56,560

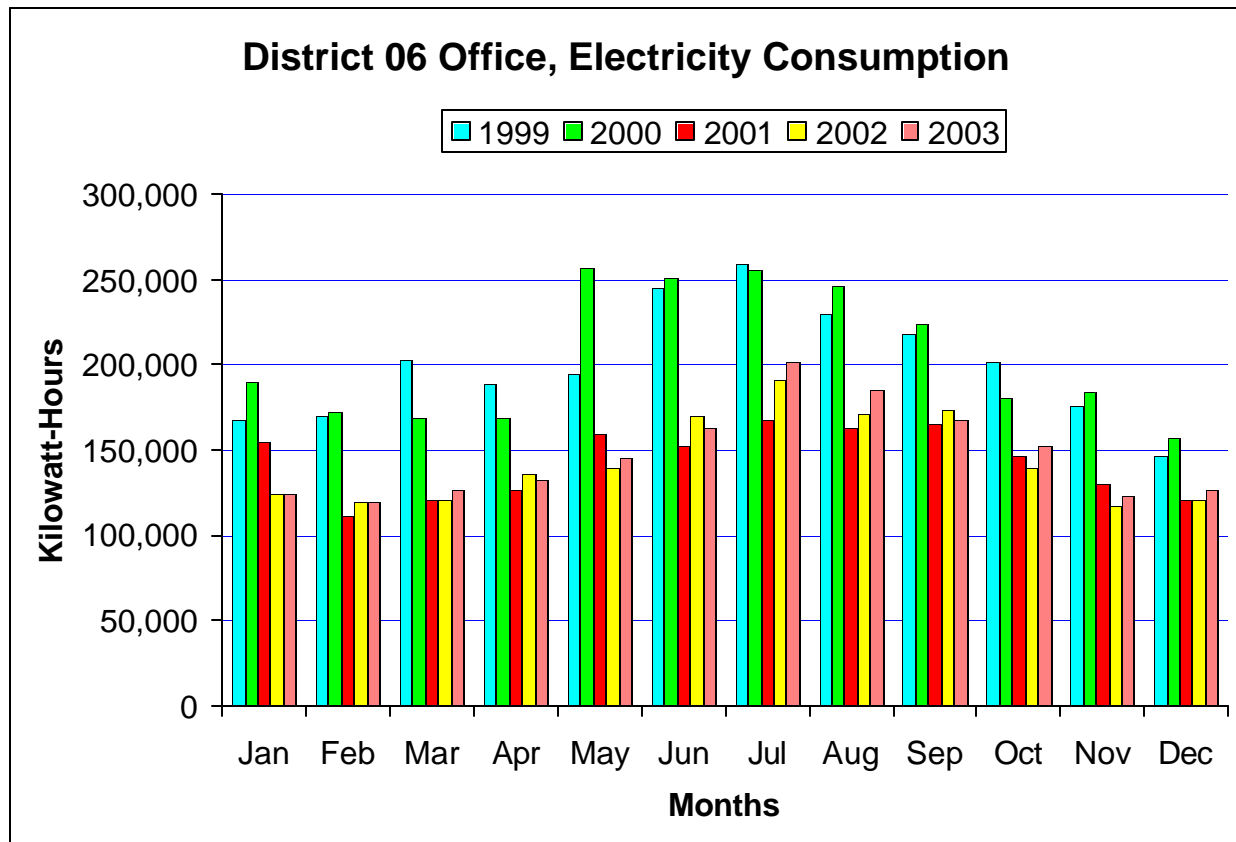


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	290	280	283	278	289	292	300	296	298	297	275	281
<b>2000</b>	294	292	299	295	304	311	334	318	307	307	307	297
<b>2001</b>	287	270	266	258	251	256	251	250	260	253	255	257
<b>2002</b>	267	260	260	253	259	260	260	262	272	258	240	260
<b>2003</b>	270	256	249	256	259	271	263	281	263	271	256	265

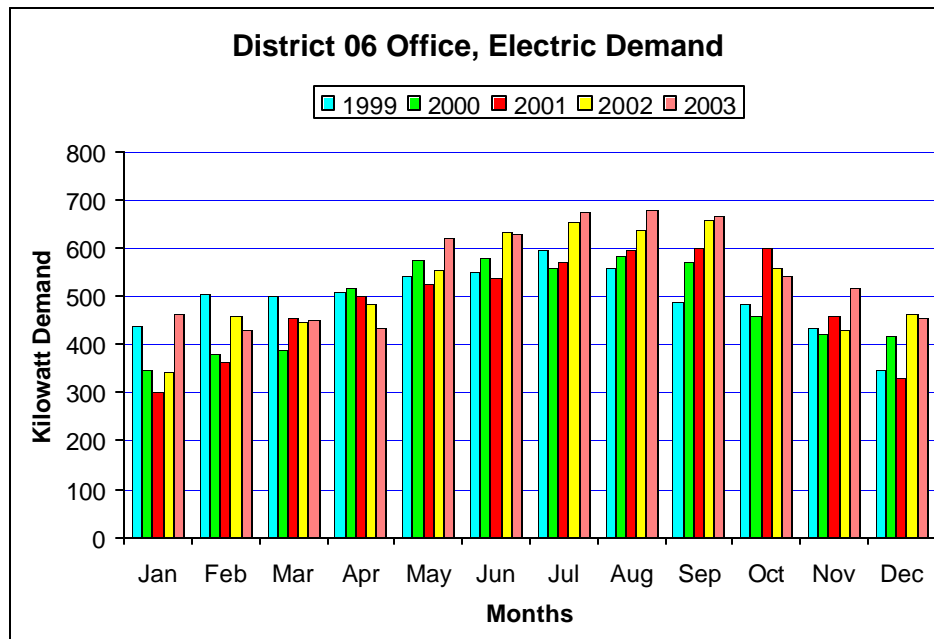


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>								685	702	698	1,699	2,380
<b>2000</b>	2,258	2,343	1,810	1,183	942	603	625	482	371	872	2,222	2,434
<b>2001</b>	3,254	3,070	1,806	1,912	761	547	642	698	715	833	1,670	2,940
<b>2002</b>	3,148	2,199	2,535	1,975	1,621	712	432	775	829	1,450	1,642	2,864
<b>2003</b>	1,809	2,374	1,611	1,723	1,294	842	523	460	649	809	1,872	3,238

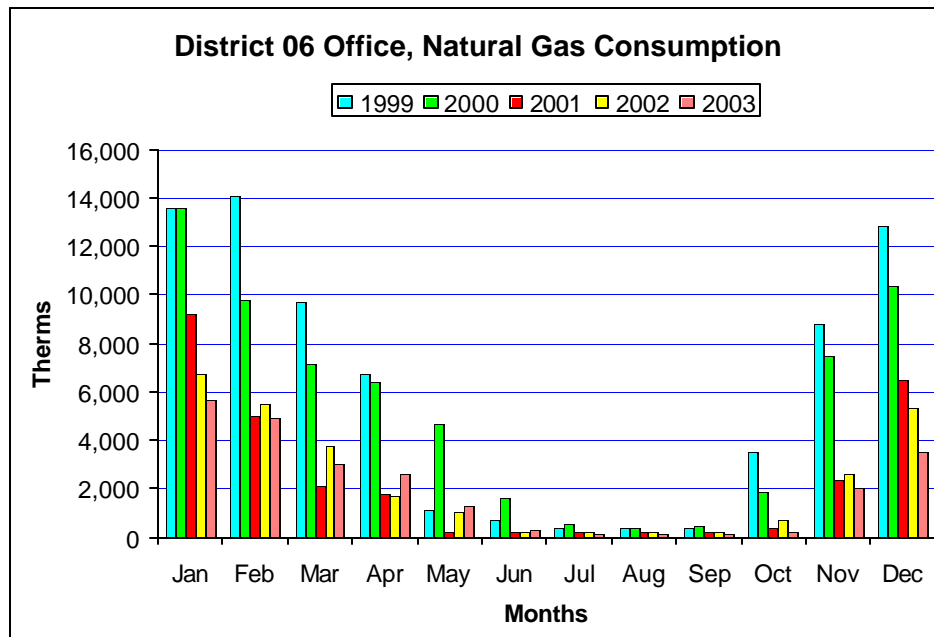
**District 06 District Office:**  
 1352 West Olive Ave  
 Fresno, CA



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	168,000	169,760	203,200	188,800	194,000	245,120	259,040	229,280	218,480	201,920	176,160	145,920
<b>2000</b>	189,680	172,480	168,080	168,800	256,880	250,880	255,760	245,920	223,840	180,960	183,920	156,560
<b>2001</b>	154,320	111,200	120,240	125,920	158,800	152,320	167,680	163,280	165,040	145,920	129,680	120,240
<b>2002</b>	123,760	119,680	120,560	135,840	138,960	169,680	190,560	170,720	173,840	139,680	117,360	120,720
<b>2003</b>	123,560	118,741	125,920	132,480	145,280	163,360	202,160	185,040	167,520	152,000	122,960	125,920

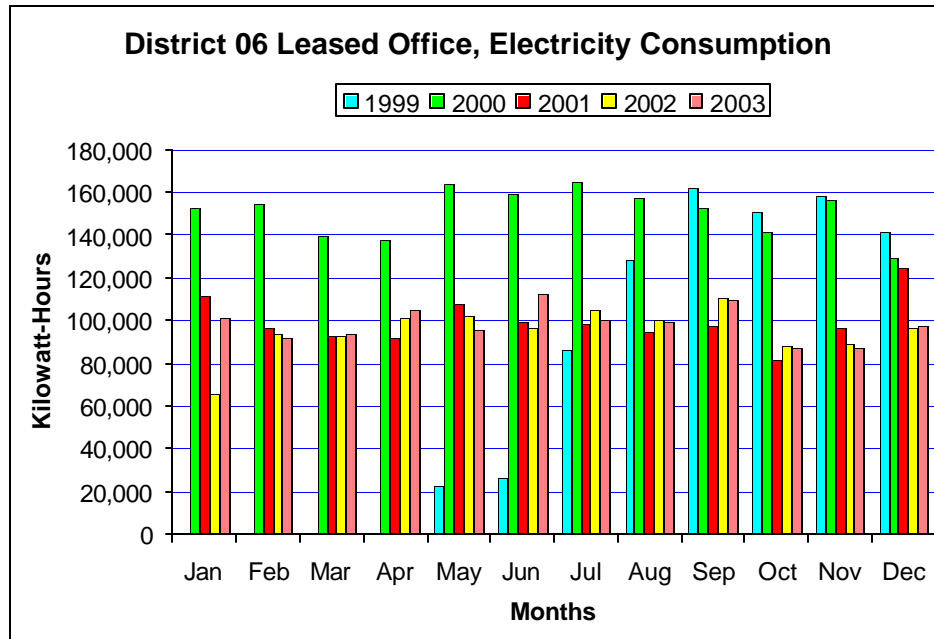


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	436	503	501	509	543	549	597	557	489	482	432	346
<b>2000</b>	346	379	387	518	576	579	557	584	571	458	421	419
<b>2001</b>	301	363	454	498	523	538	570	594	600	600	459	332
<b>2002</b>	342	458	445	483	555	634	653	635	656	557	430	462
<b>2003</b>	462	429	450	435	618	630	672	677	667	542	518	456

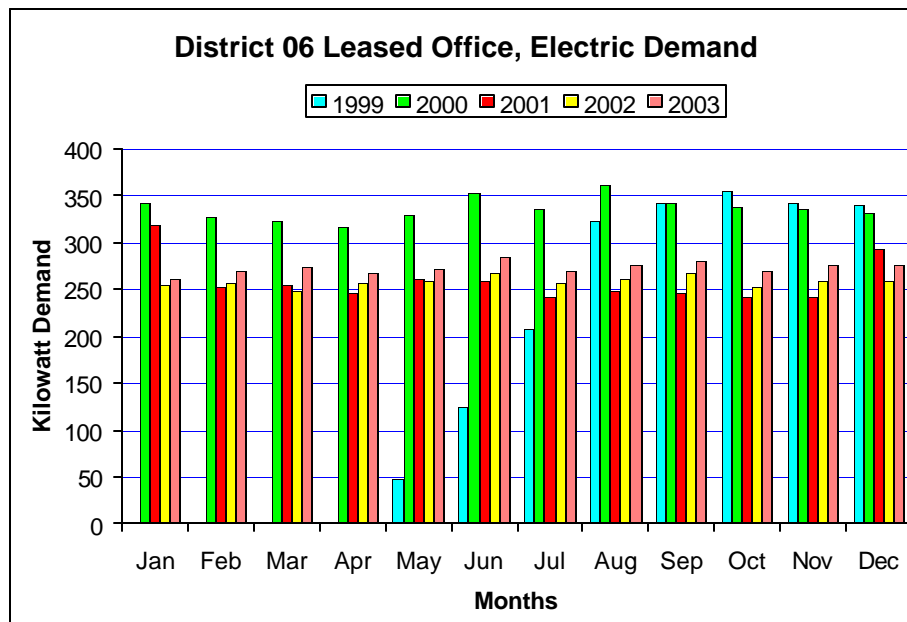


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	13,591	14,110	9,704	6,773	1,141	718	393	413	397	3,511	8,806	12,825
<b>2000</b>	13,577	9,824	7,173	6,374	4,671	1,644	519	388	502	1,867	7,490	10,342
<b>2001</b>	9,214	5,001	2,125	1,799	225	181	196	184	206	412	2,346	6,519
<b>2002</b>	6,739	5,492	3,727	1,731	1,022	234	206	224	191	751	2,622	5,347
<b>2003</b>	5,671	4,895	3,030	2,621	1,258	289	116	124	124	196	2,043	3,516

**District 06 District (Leased) Office at 2015 East Shields Ave.:**

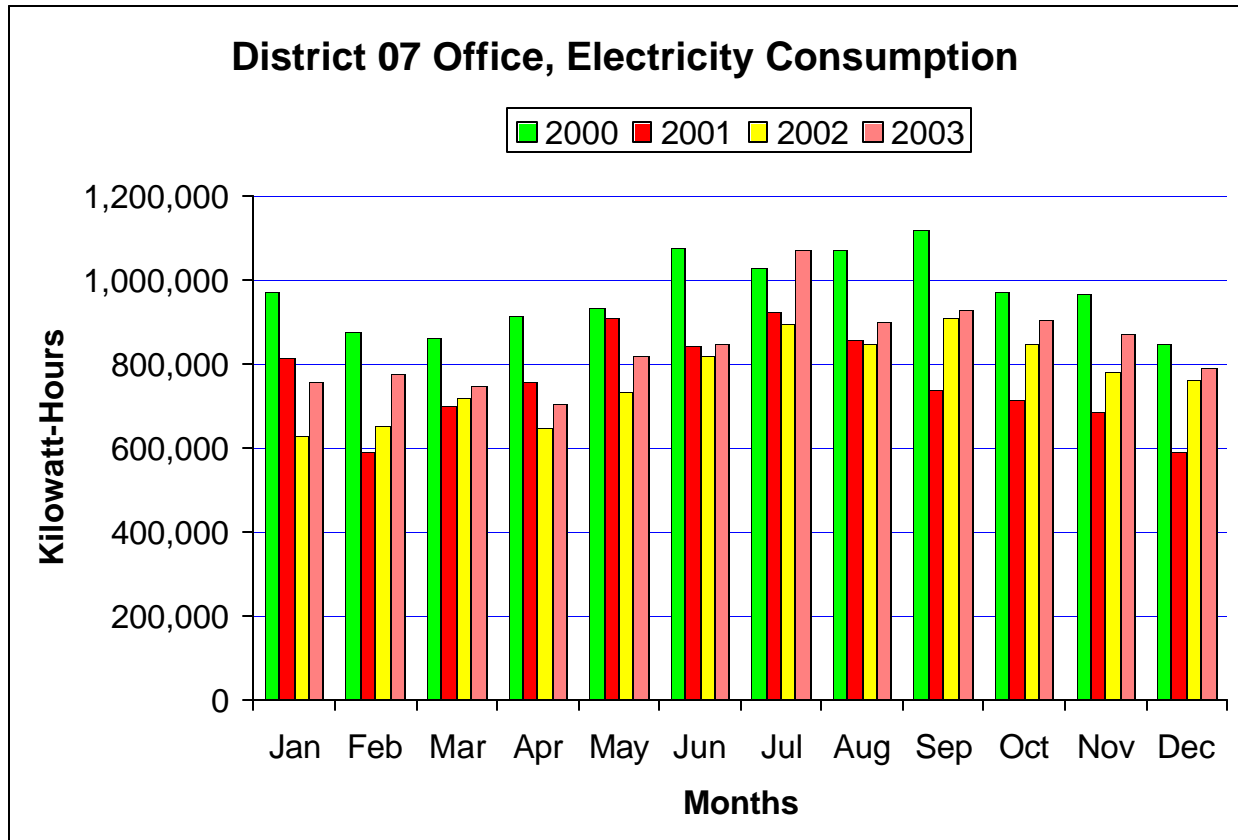


Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999					22,720	26,440	86,160	128,520	162,320	150,480	158,000	141,320
2000	152,800	154,400	139,600	137,980	163,900	159,580	164,620	157,040	152,880	141,520	156,800	129,120
2001	111,040	96,720	92,560	91,880	107,560	99,320	98,240	94,480	97,440	81,200	96,080	124,800
2002	65,360	93,280	93,080	101,000	101,760	96,888	104,480	99,800	110,600	88,160	88,680	96,240
2003	100,920	92,240	93,760	104,880	95,520	112,200	100,000	99,000	110,000	87,000	87,000	97,000

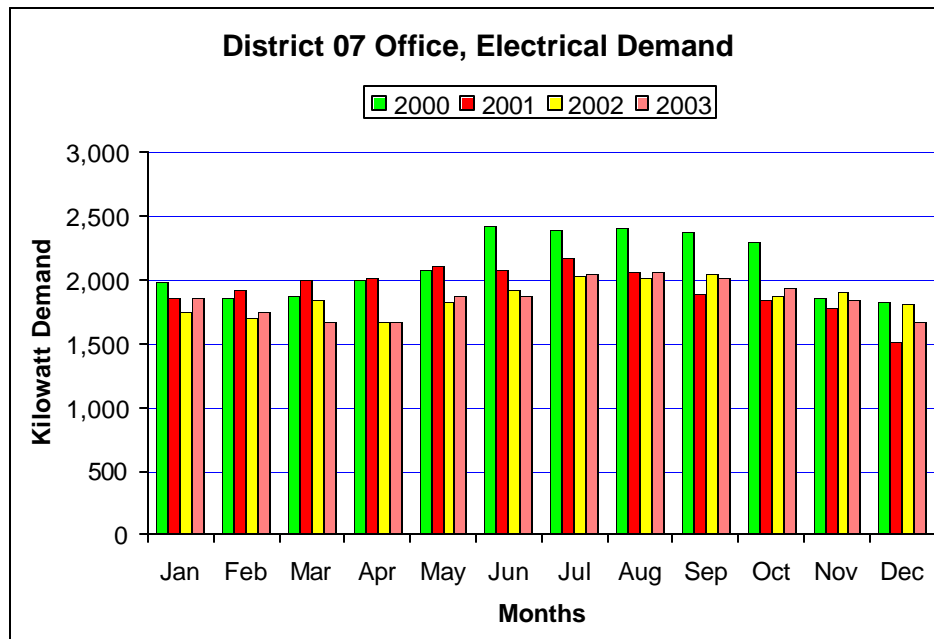


Monthly Electrical Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999					48	125	208	324	342	354	342	339
2000	343	328	322	316	330	353	335	362	342	337	335	331
2001	318	253	254	246	261	259	242	248	247	242	242	293
2002	254	256	248	256	258	268	256	261	268	252	259	259
2003	261	269	274	267	271	284	270	275	280	270	275	275

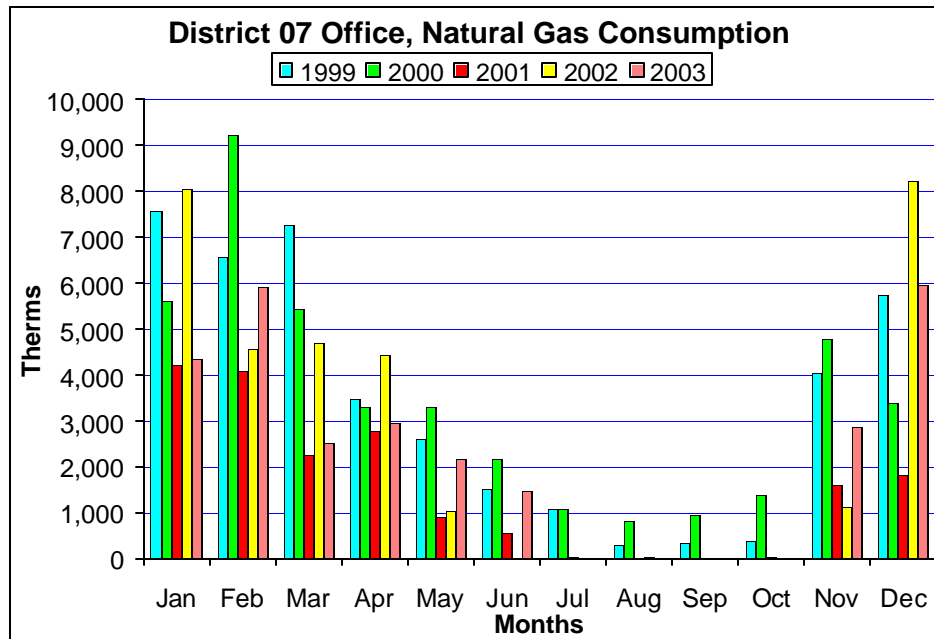
**District 07 District Office:**  
 120 South Spring Street  
 Los Angeles, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	970,440	877,182	860,096	915,625	934,346	1,073,933	1,026,280	1,069,880	1,119,840	972,080	966,296	847,347
2001	814,660	590,353	699,234	758,084	908,789	841,040	924,480	856,520	738,240	713,811	687,320	590,091
2002	628,517	651,368	716,500	649,560	732,253	820,341	895,465	845,960	907,534	849,151	782,735	759,432
2003	758,640	777,280	747,040	706,440	821,080	847,862	1,072,593	899,720	929,204	904,200	869,960	790,172

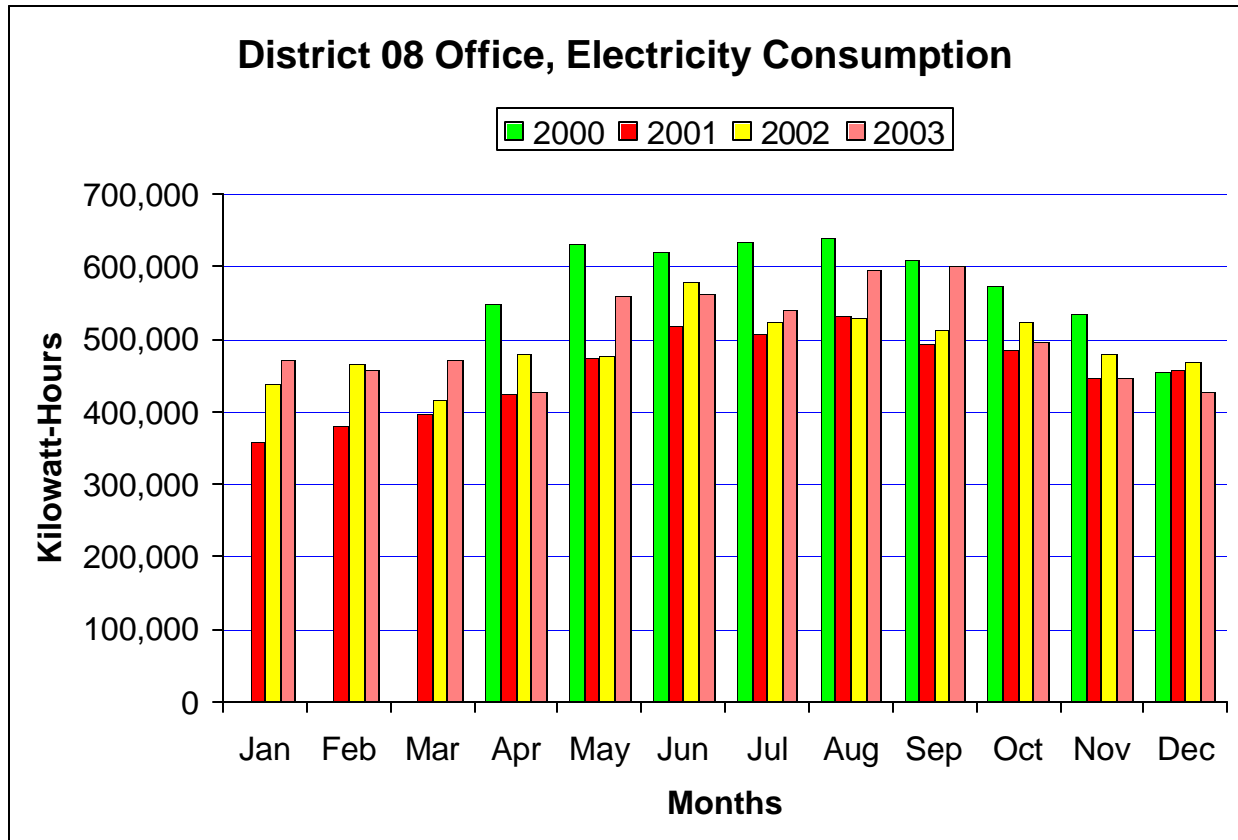


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>2000</b>	1,982	1,852	1,868	1,993	2,077	2,414	2,390	2,402	2,380	2,296	1,858	1,825
<b>2001</b>	1,860	1,915	1,999	2,006	2,104	2,074	2,172	2,058	1,895	1,833	1,774	1,508
<b>2002</b>	1,739	1,697	1,836	1,670	1,831	1,912	2,023	2,007	2,049	1,871	1,901	1,810
<b>2003</b>	1,863	1,749	1,669	1,673	1,877	1,873	2,044	2,056	2,012	1,937	1,836	1,667



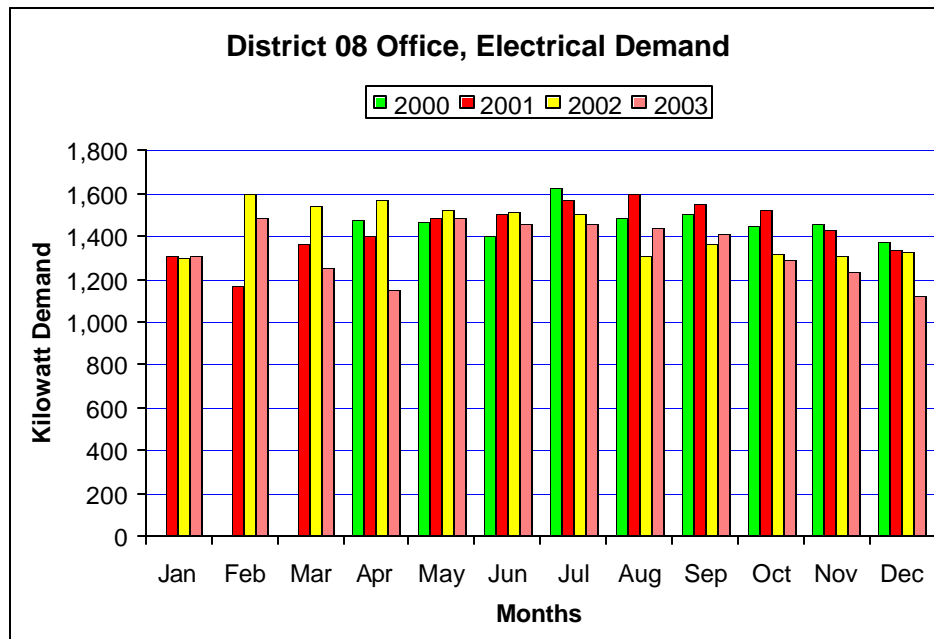
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	\$3,125	\$2,776	\$2,840	\$1,555	\$1,158	\$738	\$564	\$195	\$91	\$223	\$2,238	\$2,705
<b>2000</b>	\$1,503	\$4,282	\$2,855	\$1,991	\$2,041	\$1,428	\$777	\$540	\$611	\$1,119	\$3,813	\$3,027
<b>2001</b>	\$3,744	\$3,748	\$2,207	\$2,549	\$778	\$435	\$41	\$0	\$0	\$45	\$788	\$845
<b>2002</b>	\$3,529	\$2,089	\$2,264	\$2,686	\$633	\$14	\$15	\$22	\$14	\$14	\$764	\$4,809
<b>2003</b>	\$3,092	\$4,305	\$2,250	\$2,129	\$1,627	\$1,194	\$16	\$16	\$14	\$14	\$1,988	\$4,157

**District 08 District Office:**  
 464 West 4<sup>th</sup> Street  
 San Bernardino, CA

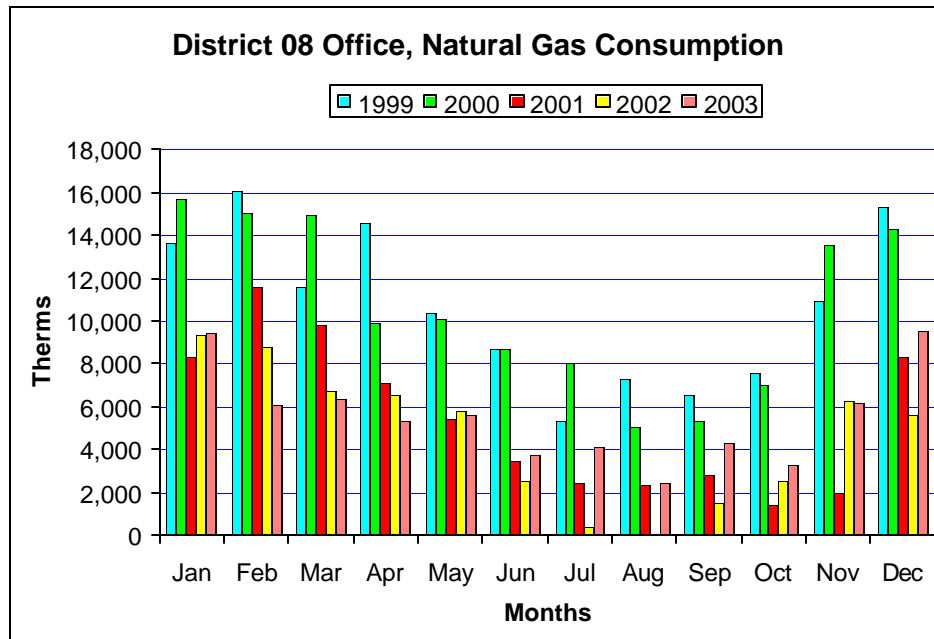


Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000				548,387	631,913	621,165	633,991	638,606	608,778	573,634	533,318	454,427
2001	359,086	379,670	395,753	423,177	473,191	518,370	508,014	531,713	492,095	485,240	446,363	457,087
2002	438,842	464,187	415,339	479,444	476,808	577,852	524,130	530,228	511,564	522,235	478,422	468,448
2003	470,375	457,403	471,854	426,602	559,908	562,930	540,256	594,505	601,049	495,992	447,651	426,354





Monthly Electrical Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000				1,479	1,463	1,404	1,627	1,485	1,501	1,443	1,454	1,373
2001	1,303	1,172	1,364	1,402	1,489	1,507	1,569	1,594	1,551	1,524	1,428	1,337
2002	1,296	1,594	1,543	1,565	1,526	1,517	1,502	1,310	1,366	1,320	1,310	1,325
2003	1,303	1,481	1,248	1,152	1,488	1,457	1,457	1,442	1,411	1,291	1,236	1,121

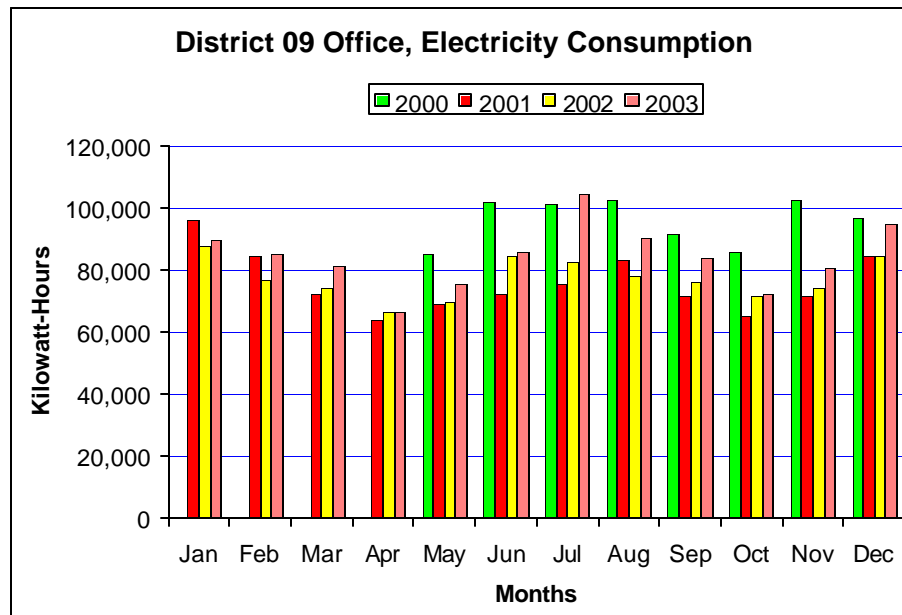


Monthly Natural Gas Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	13,670	16,074	11,558	14,538	10,417	8,729	5,359	7,275	6,550	7,618	10,935	15,330
2000	15,683	15,035	14,972	9,938	10,087	8,721	8,002	5,081	5,351	7,058	13,513	14,316
2001	8,320	11,546	9,796	7,105	5,421	3,467	2,410	2,312	2,808	1,404	1,979	8,340
2002	9,340	8,794	6,768	6,499	5,811	2,545	355	3	1,495	2,539	6,273	5,641
2003	9,416	6,074	6,396	5,362	5,611	3,776	4,115	2,463	4,279	3,316	6,202	9,573

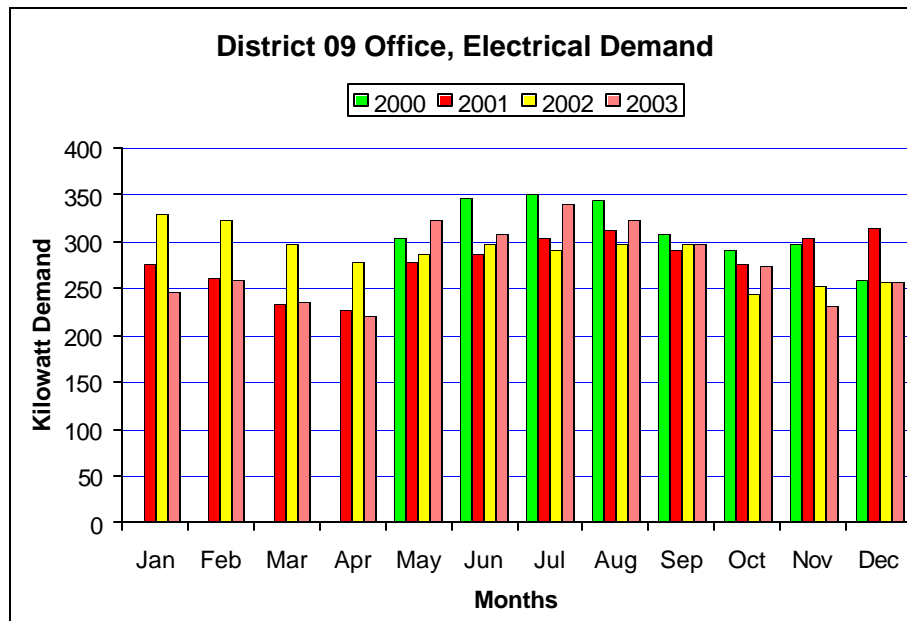
**District 09 District Office:**

500 South Main Street

Bishop, CA

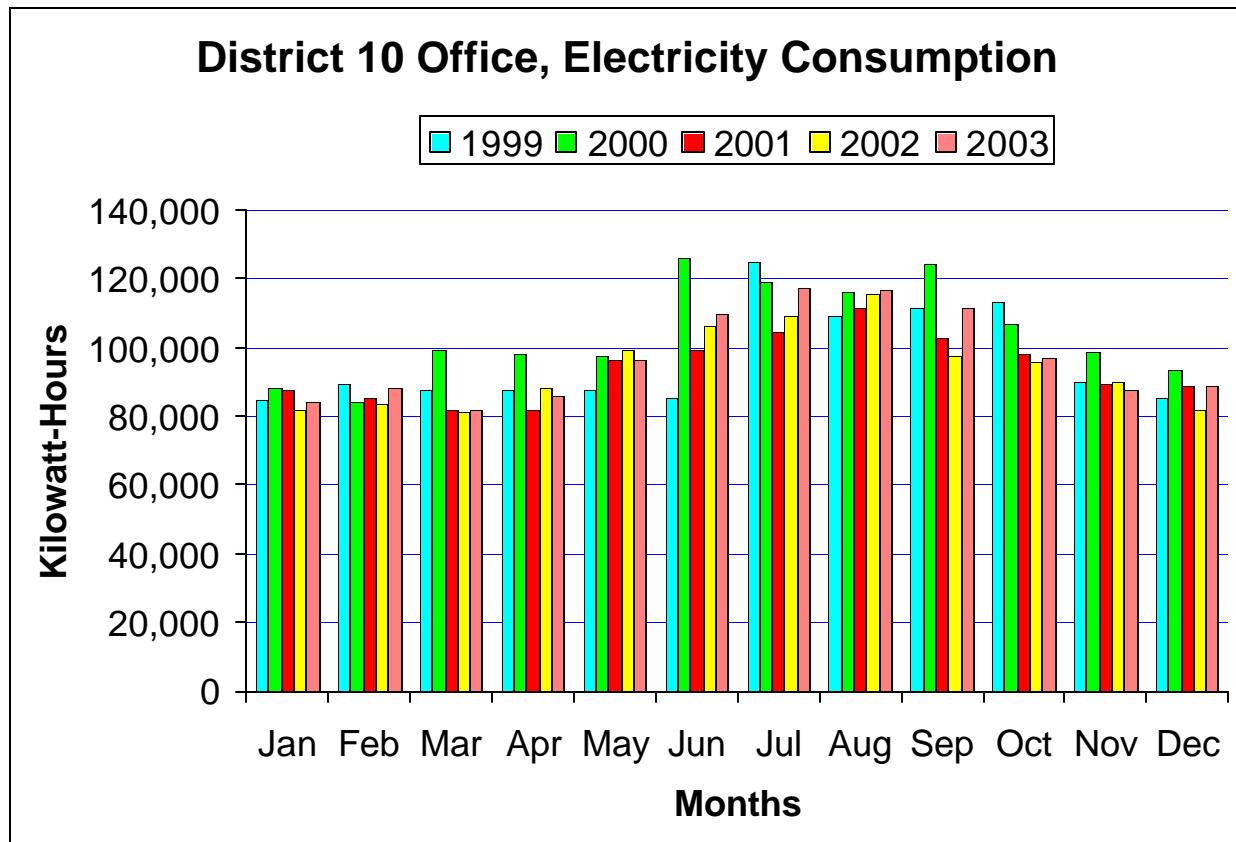
**Monthly Electricity Consumption**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000					85,161	101,731	101,305	102,797	91,813	85,979	102,633	97,065
2001	96,269	84,328	72,322	64,241	69,096	72,552	75,609	83,066	71,569	65,496	71,815	84,426
2002	87,577	77,031	74,057	66,500	69,411	84,895	82,895	78,048	76,413	71,927	74,444	84,789
2003	89,651	85,335	81,159	66,680	75,803	85,782	104,450	90,374	84,175	72,291	80,455	94,775

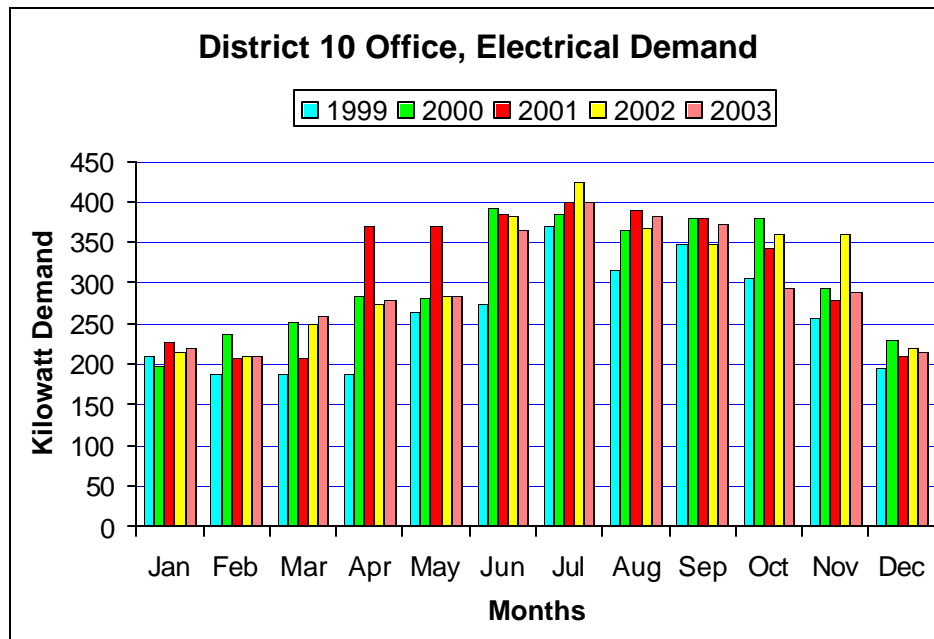
**Monthly Electrical Demand**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000					303	346	351	345	308	291	298	260
2001	276	261	234	227	278	286	304	312	291	277	303	314
2002	330	322	297	278	286	297	290	297	298	245	252	257
2003	246	258	236	221	323	308	340	323	298	273	232	257

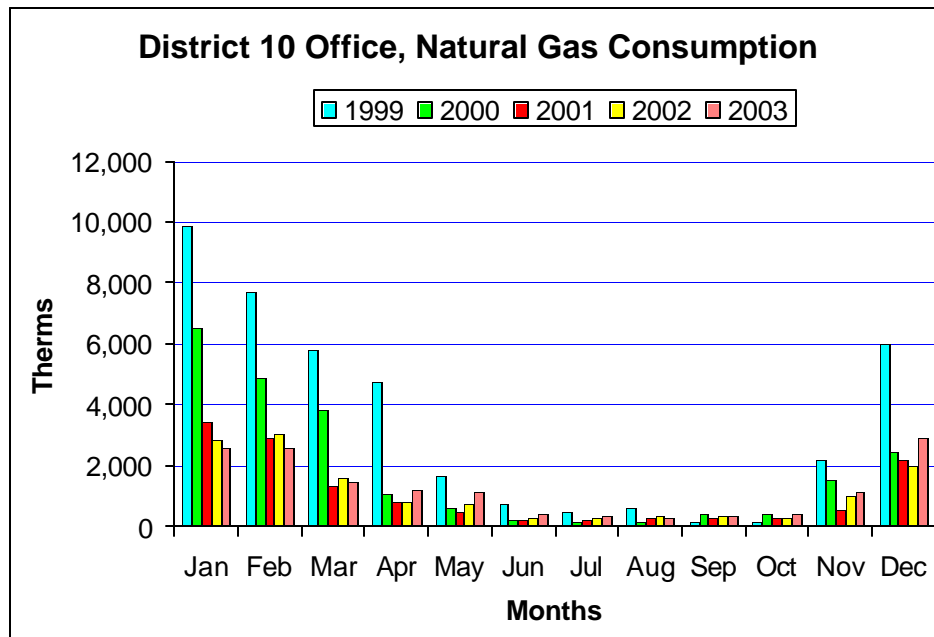
**District 10 District Office:**  
 1976 East Charter Way  
 Stockton, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	84,840	89,520	87,720	87,720	87,720	85,440	124,680	109,320	111,360	113,040	90,120	85,440
2000	87,960	84,000	99,000	98,280	97,320	125,880	119,280	116,400	124,440	107,040	98,640	93,600
2001	87,600	85,560	81,840	81,962	96,598	99,240	104,280	111,480	102,960	98,160	89,162	88,800
2002	81,960	83,400	81,120	88,088	99,480	106,200	109,080	115,320	97,680	95,760	89,640	82,080
2003	84,240	88,320	81,720	85,800	96,240	109,440	117,480	116,640	111,360	97,080	87,840	88,920



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	211	188	188	188	265	274	370	317	348	307	256	196
<b>2000</b>	198	238	253	284	282	392	385	366	379	379	294	230
<b>2001</b>	228	208	208	370	370	385	401	390	380	344	280	211
<b>2002</b>	216	209	250	274	284	383	424	368	349	361	361	220
<b>2003</b>	220	209	259	280	283	366	401	382	373	294	290	214

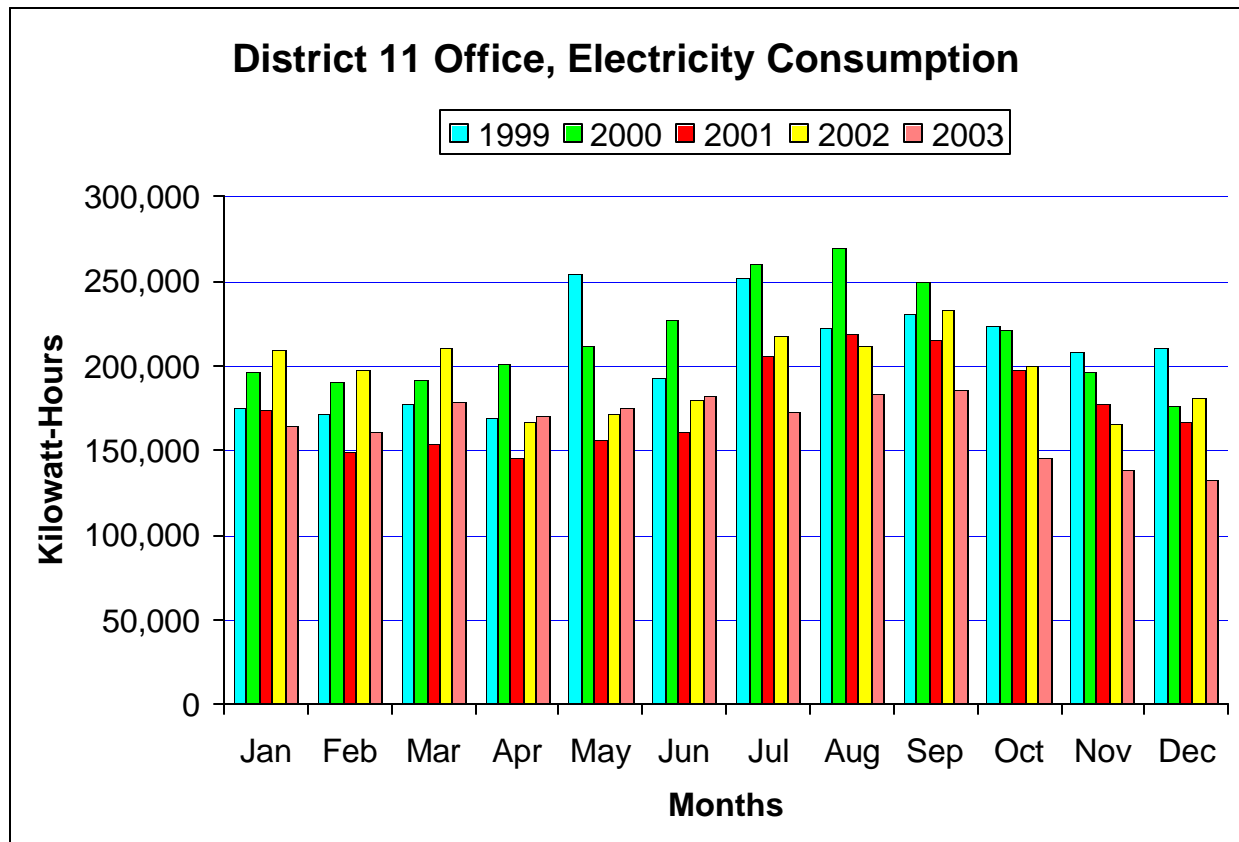


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	9,873	7,682	5,788	4,746	1,648	728	464	618	182	141	2,217	5,982
<b>2000</b>	6,497	4,869	3,795	1,067	587	209	156	150	390	439	1,500	2,474
<b>2001</b>	3,437	2,931	1,355	811	496	213	230	269	252	258	549	2,189
<b>2002</b>	2,862	3,024	1,586	809	767	293	289	338	317	310	976	1,987
<b>2003</b>	2,558	2,585	1,431	1,195	1,130	423	318	292	341	397	1,107	2,906

**District 11 District Office:**

4075 Taylor Street

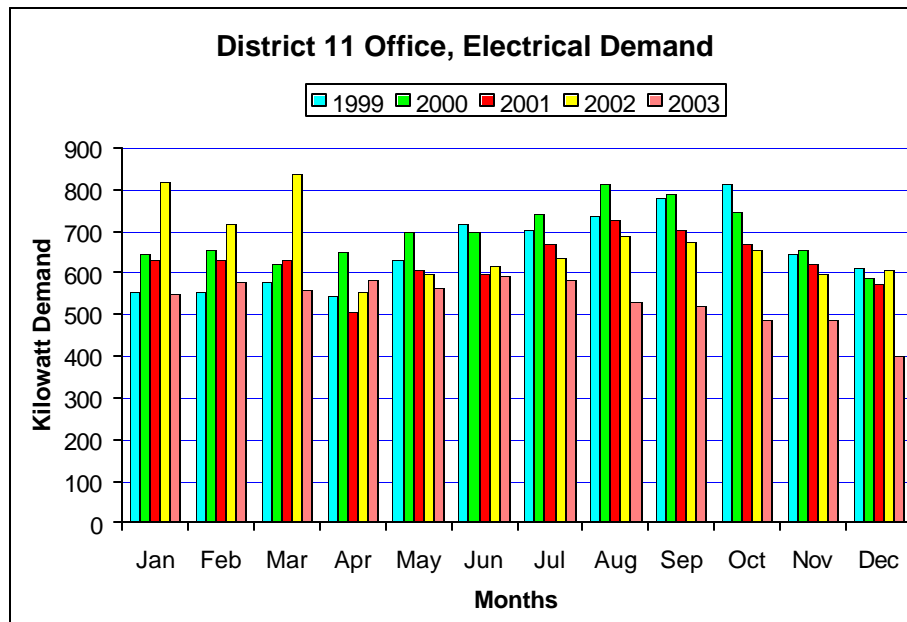
San Diego, CA



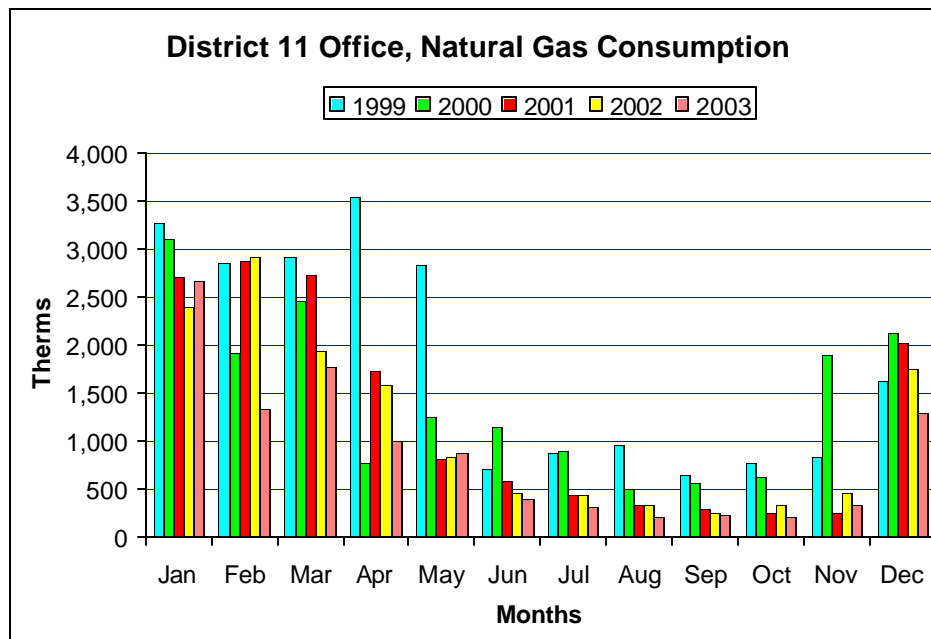
Monthly Electricity Consumption

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	175,677	171,177	177,427	168,776	254,671	192,769	252,146	222,203	230,813	223,410	207,680	210,784
2000	196,091	190,288	191,416	201,311	211,565	227,282	260,219	269,933	249,360	221,602	196,118	176,099
2001	174,401	148,630	153,856	145,613	156,611	160,323	205,707	219,033	215,396	197,769	177,470	167,262
2002	209,248	197,565	210,683	166,594	171,040	180,165	218,061	211,259	233,391	199,887	165,422	181,209
2003	163,900	160,399	178,096	169,922	174,862	181,759	172,945	183,931	185,985	145,673	137,979	132,148

Note: From July 2003 on you can see the movement of staff out of this facility as the District Office complex moves toward replacement scheduled for 2006/07 FY.



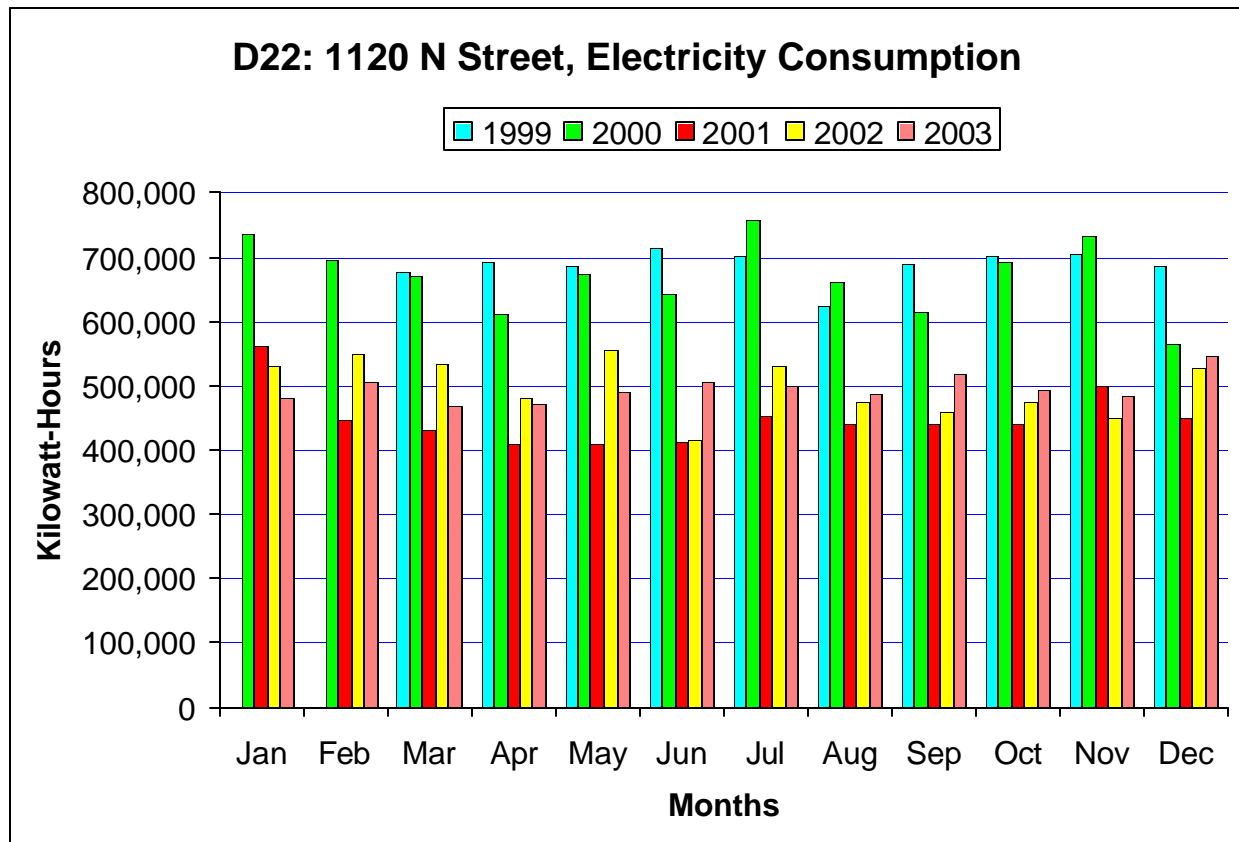
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	556	553	578	546	632	718	703	738	778	811	647	612
<b>2000</b>	646	654	622	650	700	697	740	812	788	744	653	586
<b>2001</b>	629	631	631	506	608	597	667	726	703	668	622	571
<b>2002</b>	816	716	835	552	597	614	638	690	672	654	598	607
<b>2003</b>	550	579	557	583	564	592	584	528	520	486	487	402



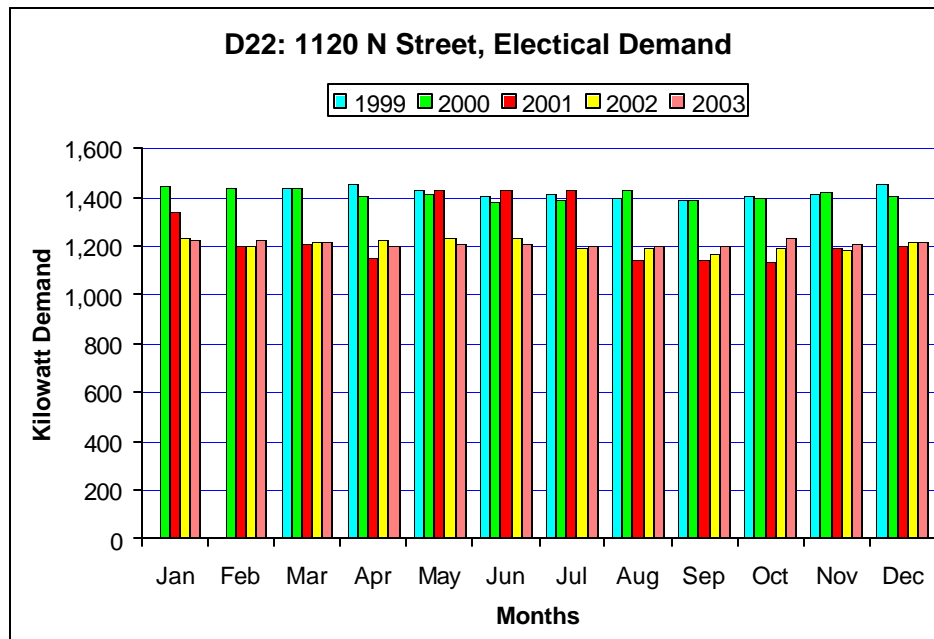
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	3,277	2,843	2,904	3,545	2,822	702	870	958	656	761	825	1,624
<b>2000</b>	3,092	1,909	2,461	765	1,251	1,147	898	491	573	616	1,887	2,129
<b>2001</b>	2,701	2,865	2,718	1,738	814	589	443	340	287	260	248	2,012
<b>2002</b>	2,385	2,919	1,934	1,573	830	452	447	332	248	337	452	1,755
<b>2003</b>	2,657	1,337	1,777	998	871	388	324	216	236	219	325	1,289

**Headquarters Building:**

1120 N Street  
Sacramento, CA

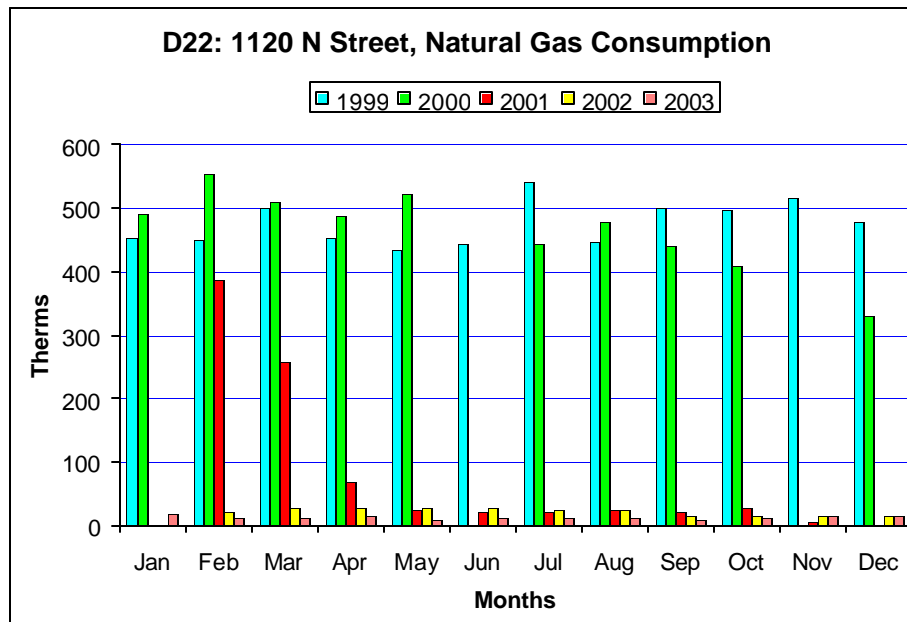


Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999			678,000	693,000	686,400	712,800	701,400	622,800	690,600	701,400	705,600	687,000
2000	736,200	695,400	669,600	612,600	675,000	643,200	756,600	660,000	615,000	691,200	733,800	565,800
2001	560,400	447,600	430,800	410,400	409,200	412,800	453,600	439,200	439,200	440,400	500,400	450,600
2002	529,200	550,800	533,400	480,600	555,000	416,400	531,000	474,000	460,200	475,200	448,800	526,800
2003	482,400	504,600	469,200	472,800	490,800	505,200	501,000	487,200	518,400	492,600	483,000	545,600



Monthly Electrical Demand

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999			1,440	1,452	1,428	1,404	1,410	1,398	1,392	1,404	1,416	1,452
2000	1,446	1,440	1,434	1,404	1,416	1,380	1,392	1,428	1,386	1,400	1,418	1,409
2001	1,337	1,198	1,205	1,148	1,428	1,428	1,428	1,146	1,146	1,134	1,190	1,203
2002	1,234	1,201	1,217	1,225	1,229	1,229	1,192	1,192	1,167	1,190	1,187	1,216
2003	1,226	1,225	1,217	1,202	1,210	1,206	1,196	1,196	1,201	1,231	1,206	1,214

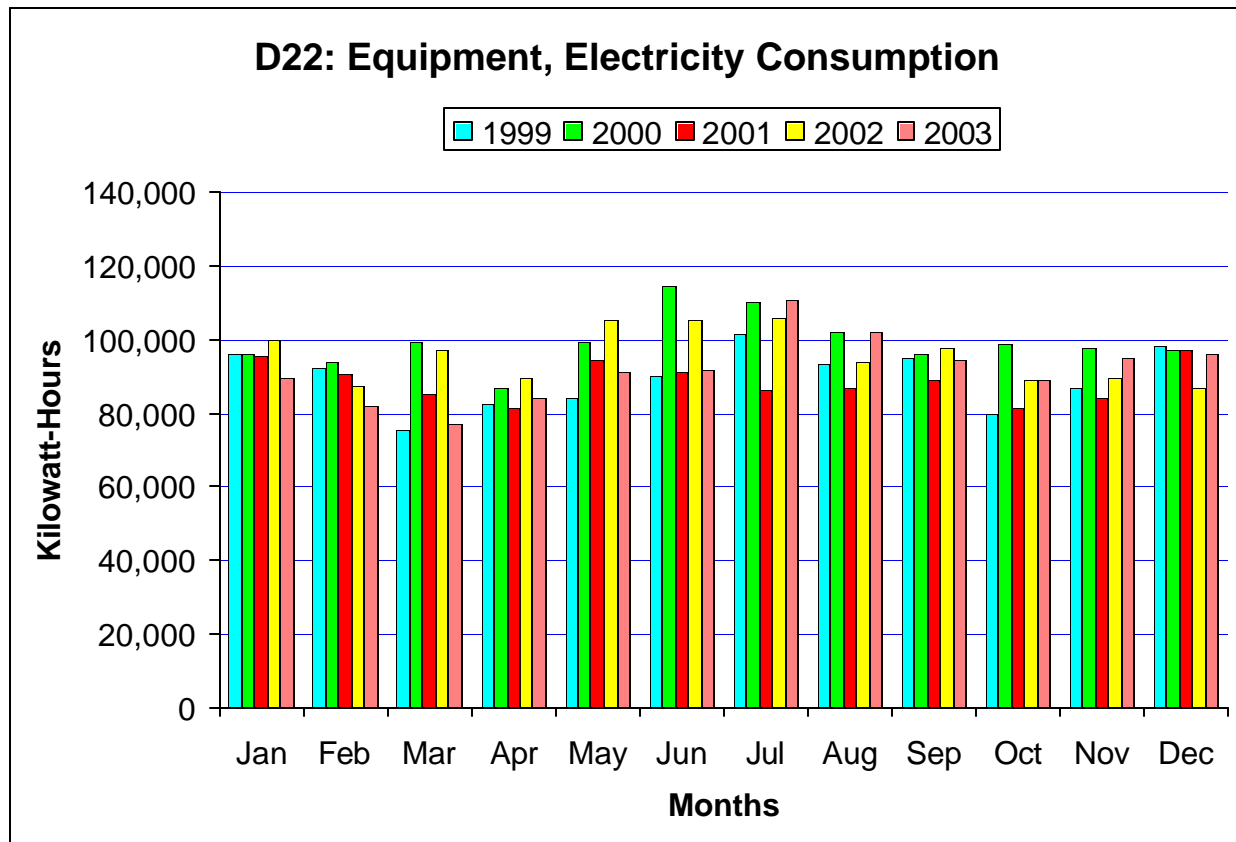


Monthly Natural Gas Consumption

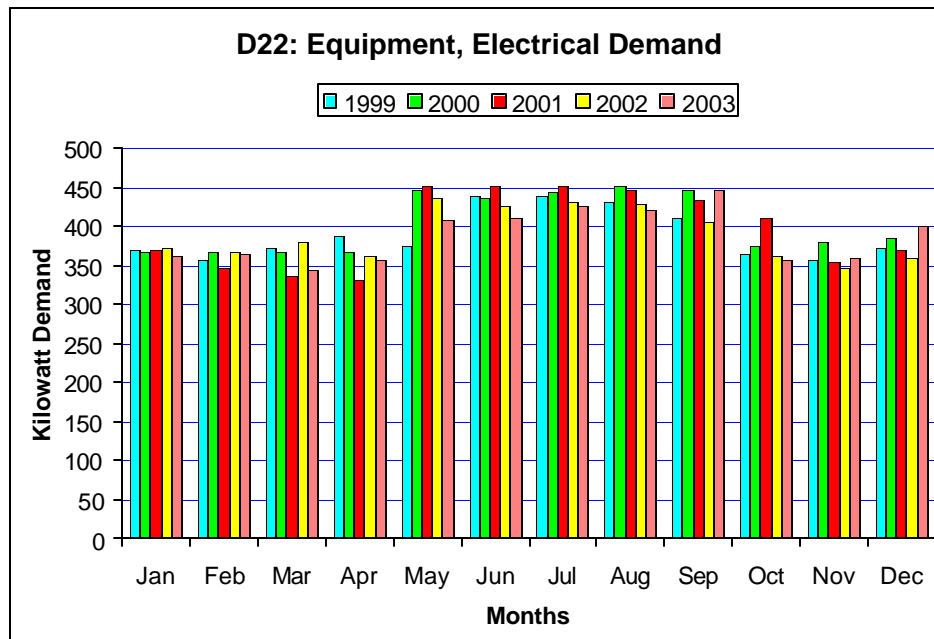
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	452	449	499	452	433	444	541	447	499	496	515	479
2000	490	555	509	487	523	0	445	477	439	409	0	329
2001	0	386	257	70	23	22	20	23	21	26	7	0
2002	0	22	26	27	26	26	24	24	16	16	14	15
2003	17	13	13	14	10	12	11	12	10	13	14	14

**Division of Equipment:**  
1805 34<sup>th</sup> Street

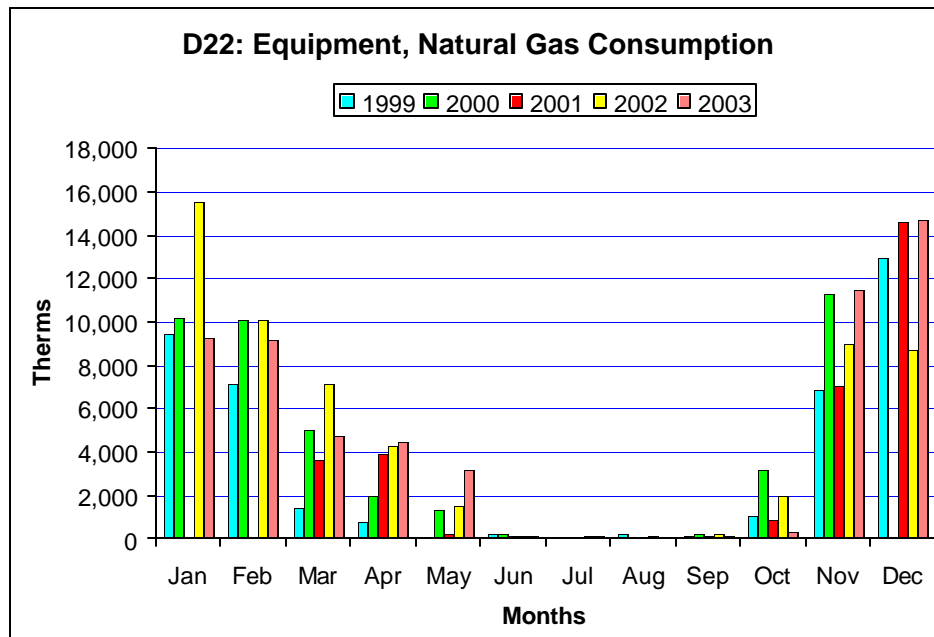




Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	96,000	92,400	75,600	82,800	84,000	90,000	101,600	93,200	95,200	79,600	86,800	98,400
2000	96,400	94,000	99,600	86,800	99,600	114,800	110,400	102,400	96,400	98,800	97,600	97,200
2001	95,600	90,800	85,200	81,200	94,400	91,200	86,400	86,800	89,200	81,200	84,400	97,200
2002	100,000	87,200	97,200	89,600	105,600	106,000	106,000	94,000	97,600	88,800	89,800	86,800
2003	89,600	82,000	76,900	84,000	91,200	92,000	110,800	102,400	94,800	88,800	95,200	96,000

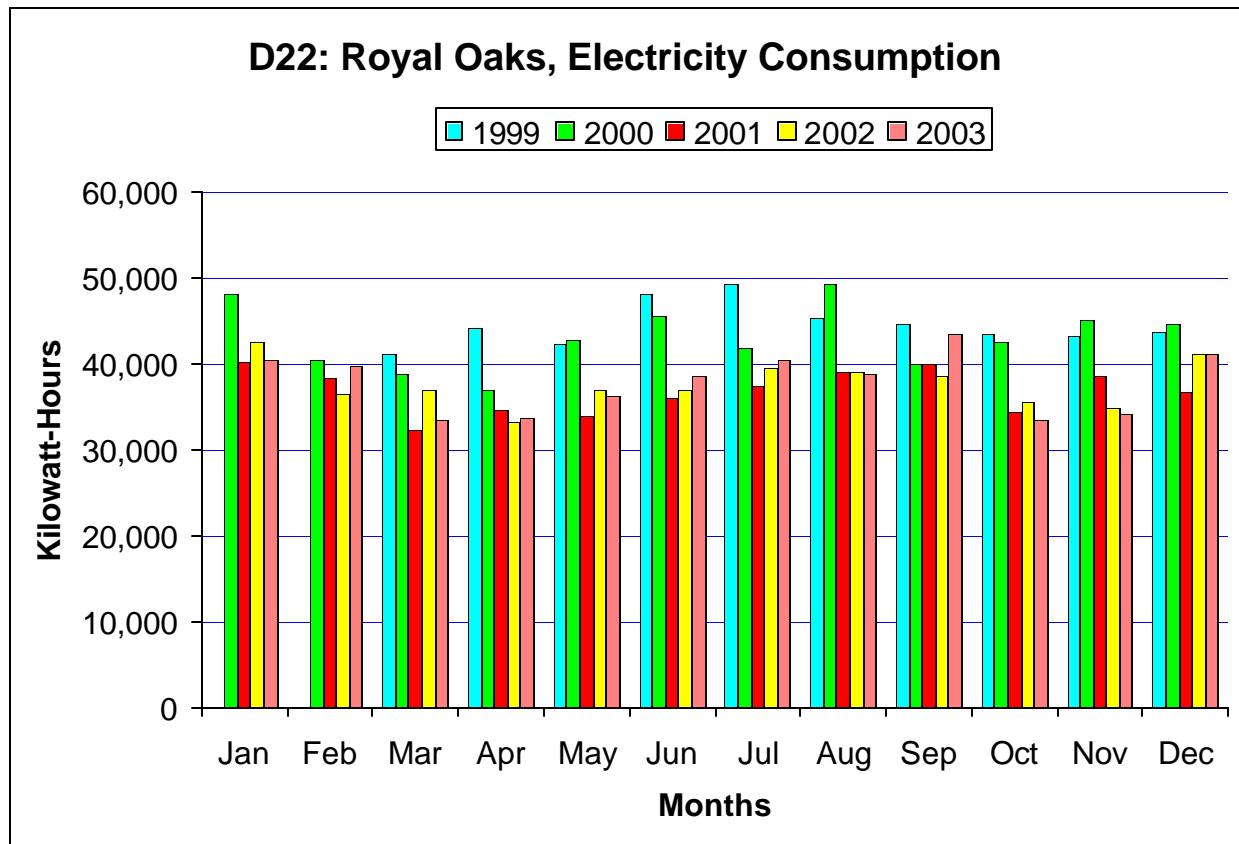


Monthly Electrical Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	369.5	358	372	388	376	440	440	432	412	364	356	372
2000	368	368	368	368	448	436	444	452	448	376	381	385
2001	371	348	337	332	452	452	452	448	435	411	354	369
2002	372	367	380	363	436	427	432	428	406	363	346	359
2003	362	364	345	358	409	411	427	422	446	357	360	401

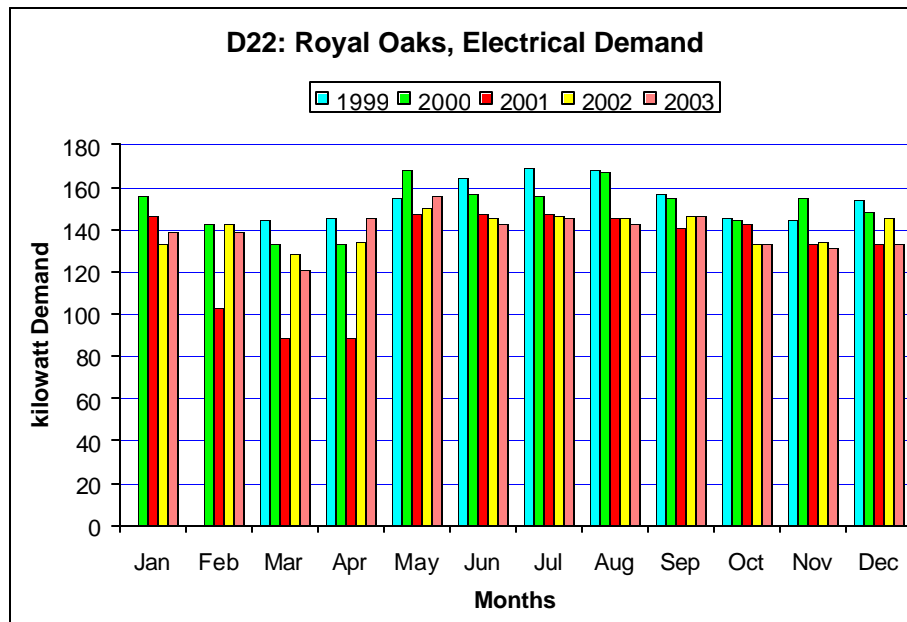


Monthly Natural Gas Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	9,401	7,135	1,460	728	0	245	0	207	164	1,036	6,828	12,949
2000	10,213	10,083	5,008	1,973	1,356	178	0	0	209	3,135	11,287	0
2001	0	0	3,626	3,933	220	86	0	0	97	861	7,057	14,635
2002	15,499	10,081	7,181	4,310	1,535	161	86	88	243	1,935	8,996	8,715
2003	9,231	9,184	4,743	4,499	3,207	110	86	73	89	337	11,507	14,704

**Department Northern California Warehouse:**  
 1900 Royal Oaks Drive  
 Sacramento, CA

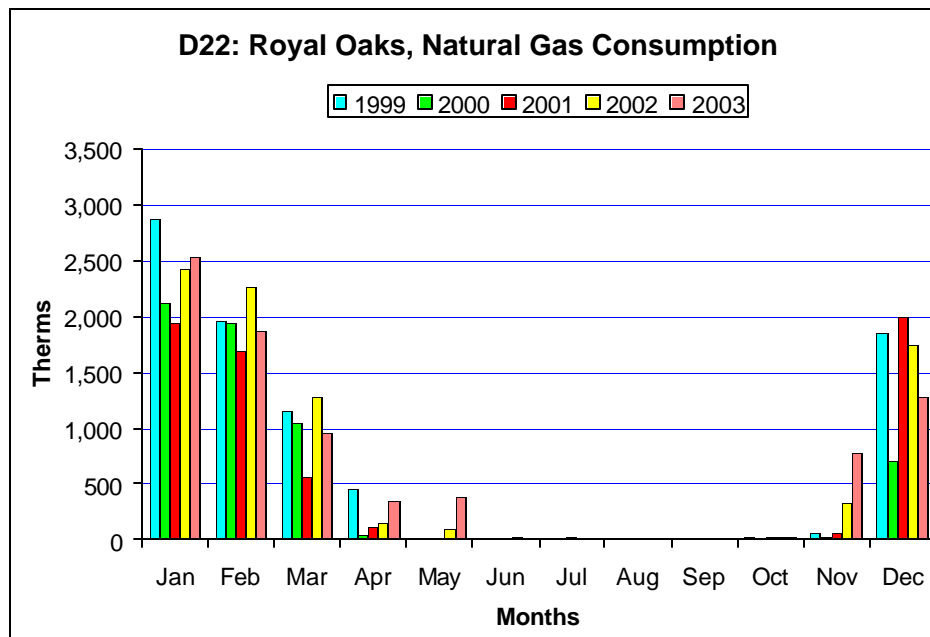


Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999			41,160	44,160	42,480	48,120	49,440	45,480	44,640	43,440	43,320	43,680
2000	48,120	40,560	38,880	36,960	42,840	45,720	42,000	49,440	39,960	42,600	45,240	44,640
2001	40,200	38,520	32,280	34,680	34,080	36,000	37,560	39,000	39,960	34,560	38,640	36,720
2002	42,720	36,480	36,960	33,360	37,080	37,080	39,480	39,120	38,760	35,520	34,800	41,160
2003	40,560	39,720	33,600	33,720	36,240	38,760	40,440	38,880	43,520	33,480	34,320	41,280



Monthly Electrical Demand

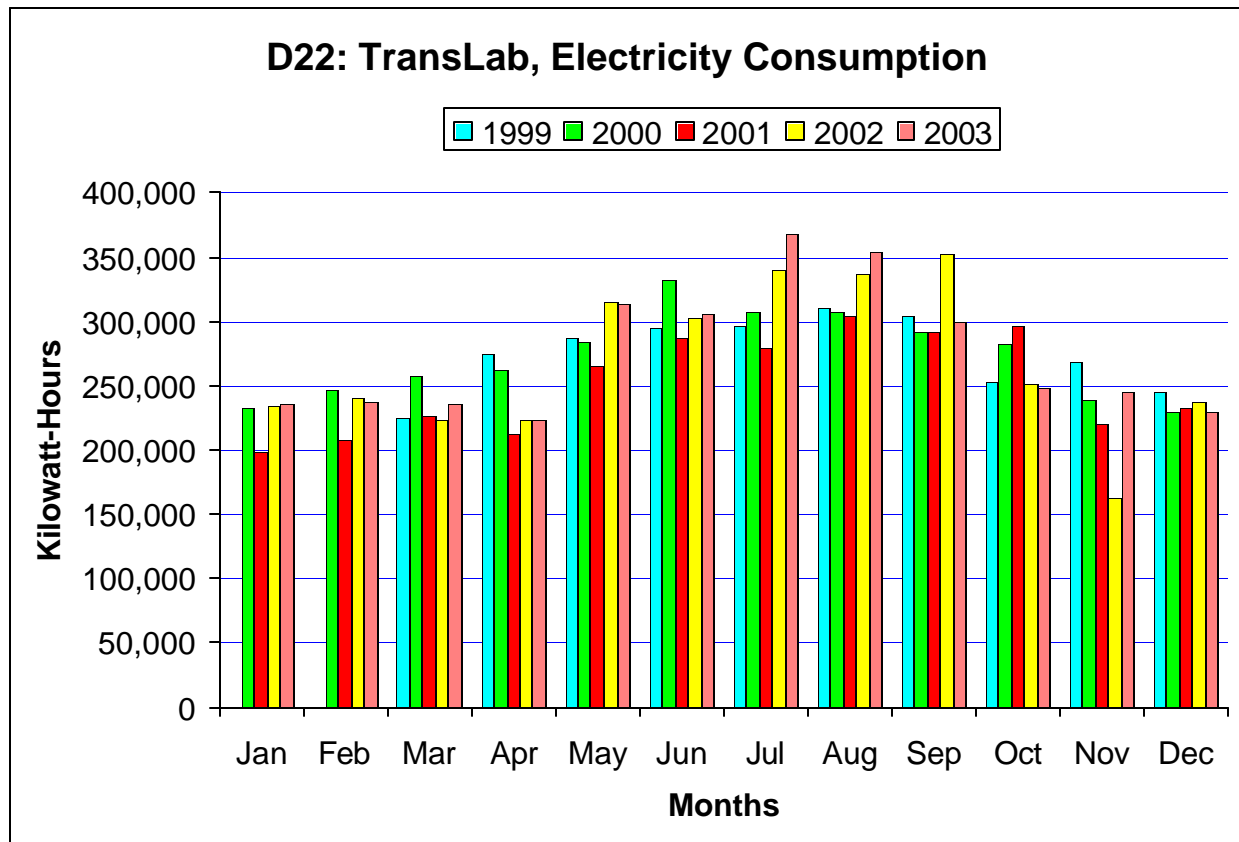
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999			144	145	155	164	169	168	157	145	144	154
2000	156	143	133	133	168	157	156	167	155	144	155	148
2001	146	103	89	89	147	147	147	145	141	143	133	133
2002	133	143	128	134	150	145	146	145	146	133	134	145
2003	139	139	121	145	156	143	145	143	146	133	131	133



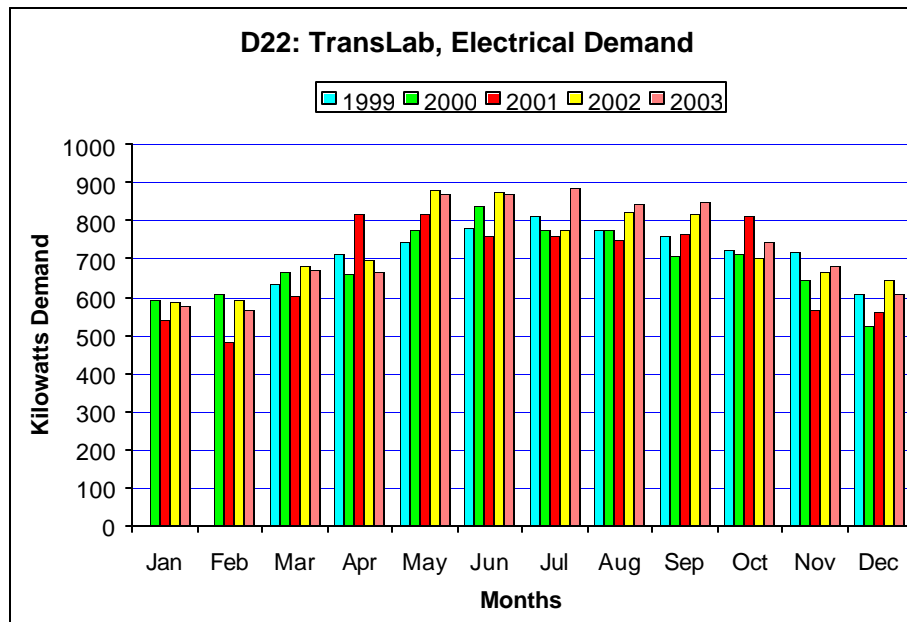
Monthly Natural Gas Consumption

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	2,883	1,968	1,162	453	12	14	11	13	12	20	60	1,862
2000	2,122	1,935	1,049	45	11	12	12	11	11	15	30	700
2001	1,945	1,695	569	113	11	0	22	12	11	16	64	1,989
2002	2,432	2,274	1,271	147	88	16	15	13	14	19	325	1,749
2003	2,542	1,878	952	347	383	15	13	13	14	17	786	1,270

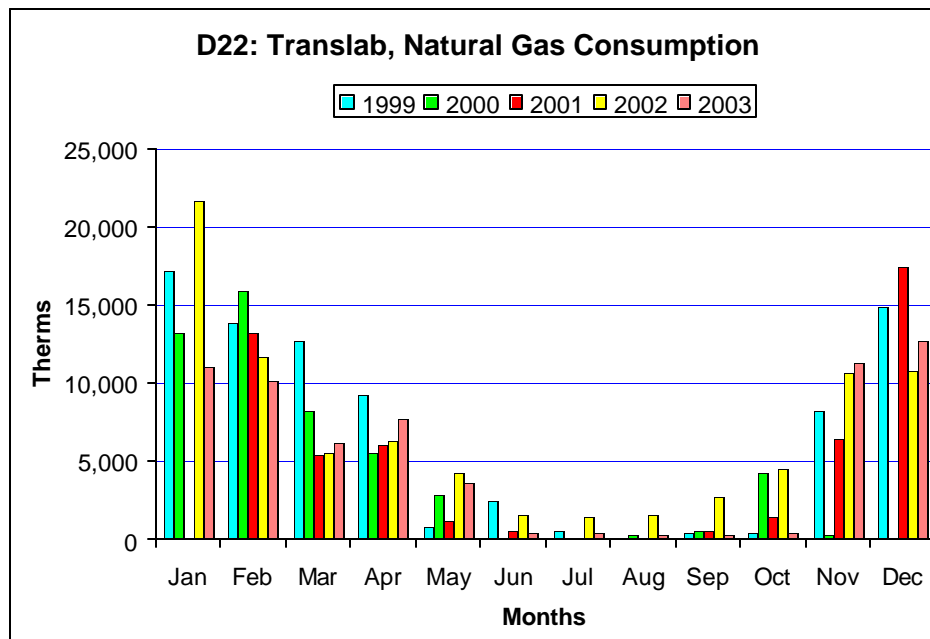
**METS (Translab):**  
5900 Folsom Blvd.  
Sacramento, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999			224,600	274,240	287,360	294,560	295,920	309,840	304,120	253,400	268,640	245,400
2000	232,440	246,800	257,120	261,520	284,120	332,760	307,840	307,080	291,840	282,200	239,360	228,960
2001	197,880	208,240	226,440	212,720	264,600	287,760	278,600	304,080	291,160	296,400	220,920	232,000
2002	234,560	240,960	222,680	224,120	315,760	302,400	340,800	337,320	352,520	251,400	162,520	237,520
2003	235,160	237,600	235,520	223,520	314,160	305,480	368,480	354,720	298,920	248,320	244,480	229,480



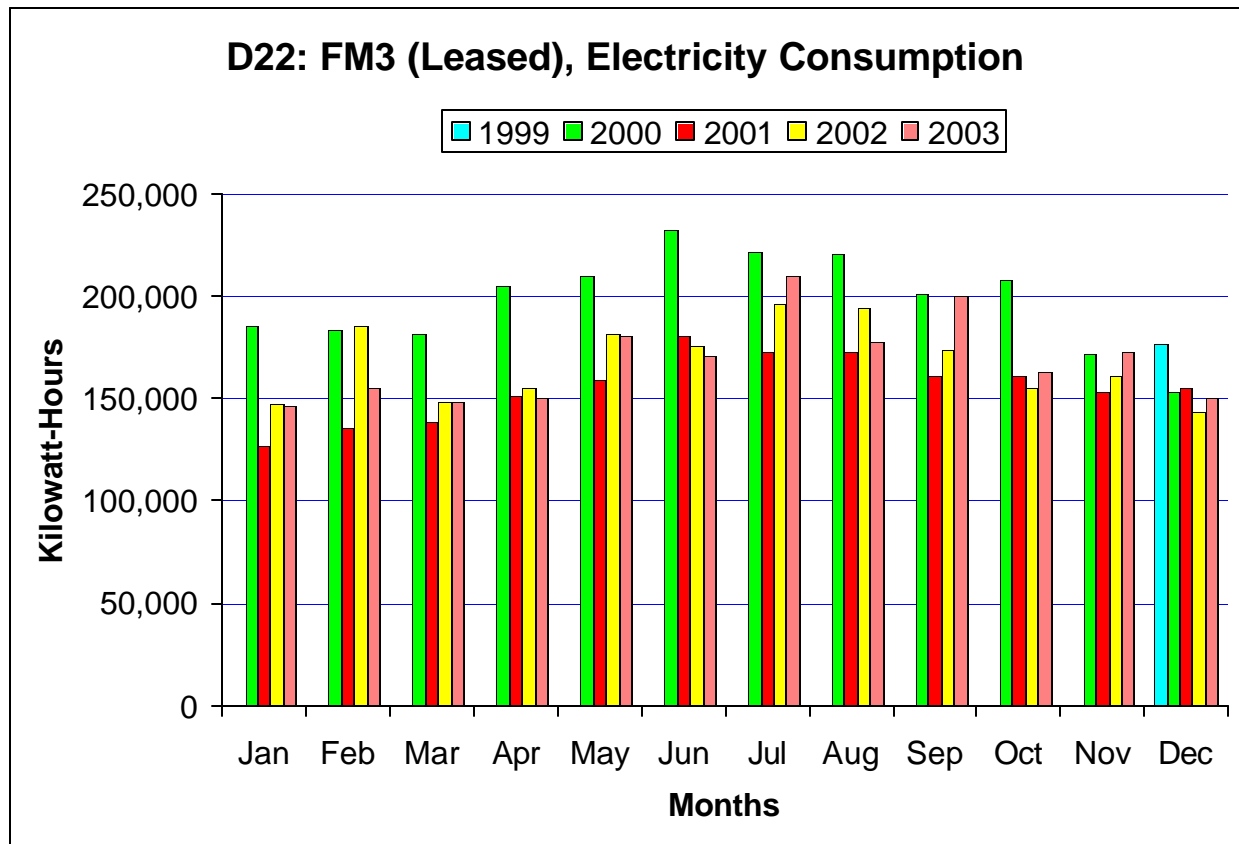
Monthly Electricity Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>			632	712	743	782	813	777	759	726	720	607
<b>2000</b>	590	610	668	662	776	839	776	777	710	714	644	524
<b>2001</b>	542	483	604	819	819	760	760	752	764	811	566	563
<b>2002</b>	587	594	679	699	881	877	775	826	820	702	664	645
<b>2003</b>	576	566	672	667	870	871	886	847	851	745	684	608



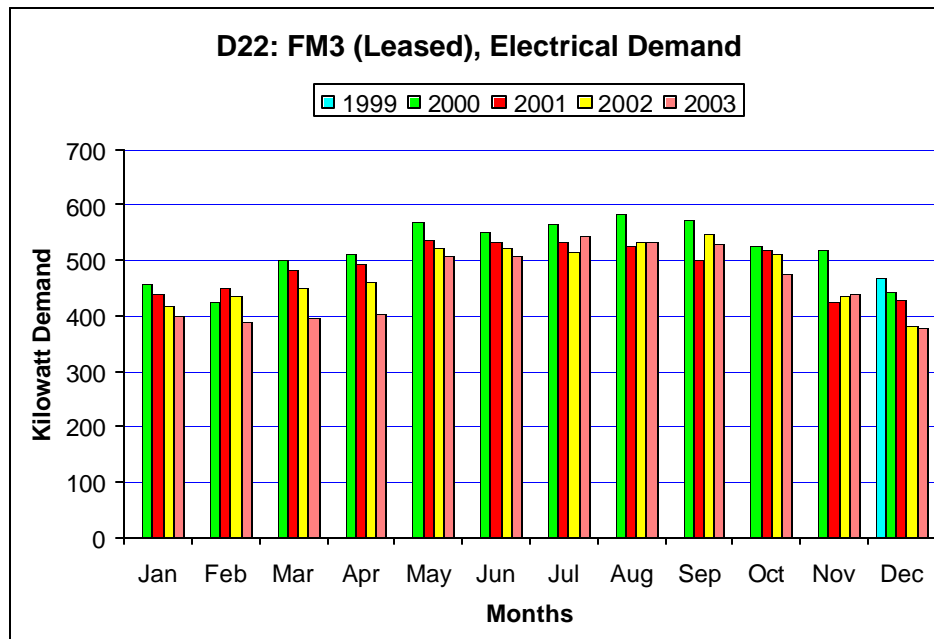
Monthly Natural Gas Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>1999</b>	17,223	13,838	12,778	9,242	804	2,448	596	12	485	473	8,238	14,901
<b>2000</b>	13,229	15,905	8,212	5,532	2,873	12	12	317	612	4,311	270	0
<b>2001</b>	23	13,269	5,450	6,110	1,158	586	13	12	520	1,413	6,400	17,524
<b>2002</b>	21,683	11,721	5,535	6,271	4,211	1,540	1,445	1,568	2,736	4,516	10,635	10,757
<b>2003</b>	11,015	10,158	6,218	7,751	3,683	375	431	349	350	373	11,341	12,681

### FM 3 (Leased Space)

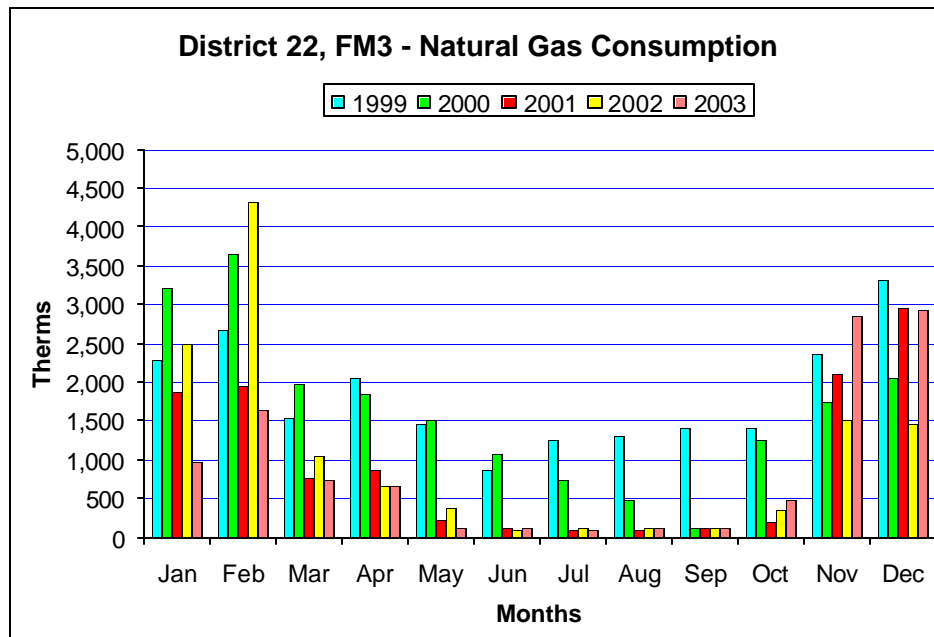
1727 30<sup>th</sup> Street  
Sacramento, CA



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999												176,400
2000	185,200	184,000	182,000	205,600	209,600	232,400	221,600	220,600	201,200	208,400	171,800	153,200
2001	126,800	136,000	138,400	151,200	159,600	180,800	172,800	172,800	161,200	161,200	153,600	154,800
2002	147,200	185,200	148,000	154,800	181,200	176,000	196,800	194,800	173,600	155,600	161,600	143,600
2003	146,000	155,600	148,000	150,800	180,800	170,800	210,000	177,600	200,400	163,200	172,800	150,800



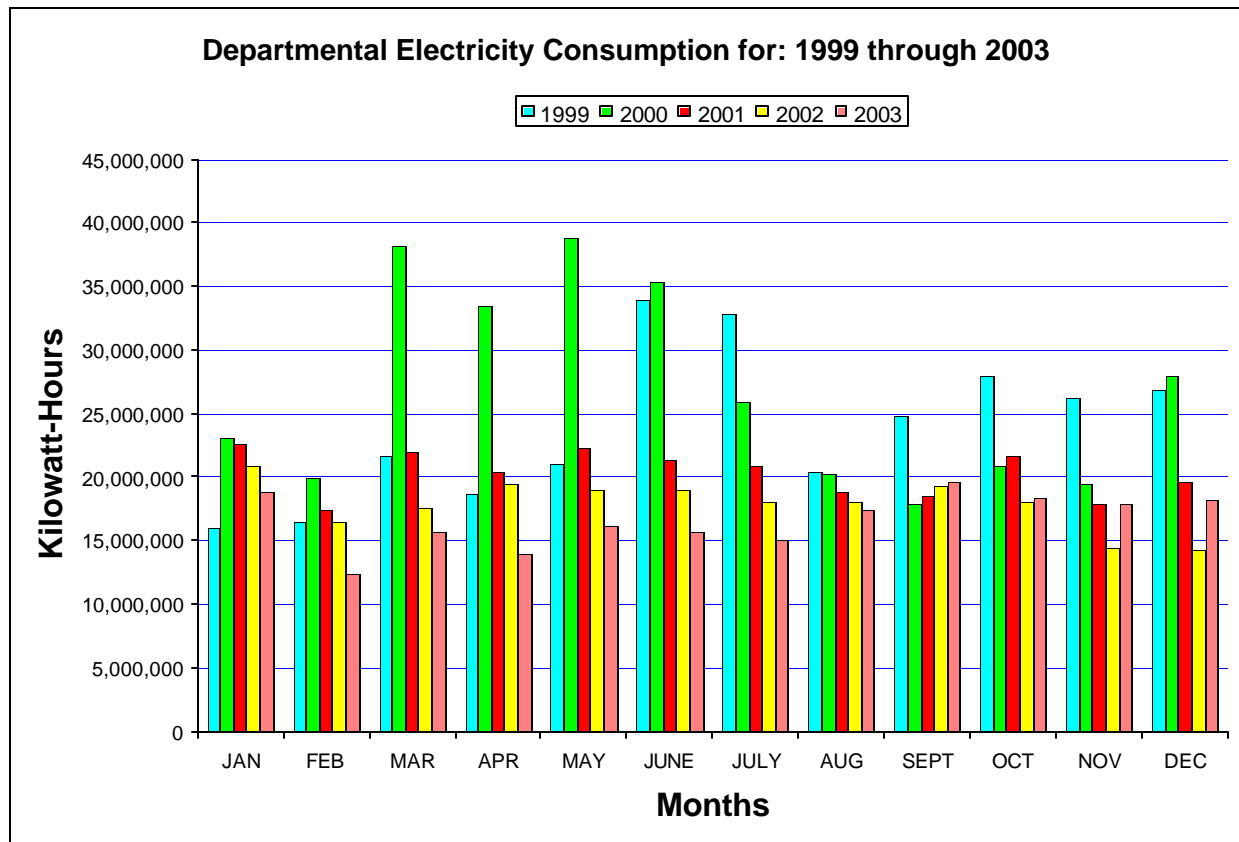
Monthly Electrical Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999												468
2000	456	424	500	512	568	552	564	584	572	525	519	444
2001	440	448	483	494	537	534	531	527	500	520	423	428
2002	419	436	448	462	522	522	513	533	547	512	437	383
2003	398	388	397	402	509	508	545	533	529	475	439	379



Monthly Natural Gas Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1999	2,280	2,664	1,547	2,066	1,468	871	1,265	1,306	1,398	1,399	2,371	3,308
2000	3,202	3,639	1,981	1,857	1,503	1,067	750	473	115	1,243	1,739	2,048
2001	1,882	1,950	762	861	219	110	94	103	107	206	2,114	2,945
2002	2,483	4,326	1,052	670	367	106	108	116	112	358	1,517	1,469
2003	972	1,641	742	657	123	116	105	113	112	488	2,843	2,939

**Statewide Monthly Kilowatt-hour Monthly Consumption: 1999 through 2003**

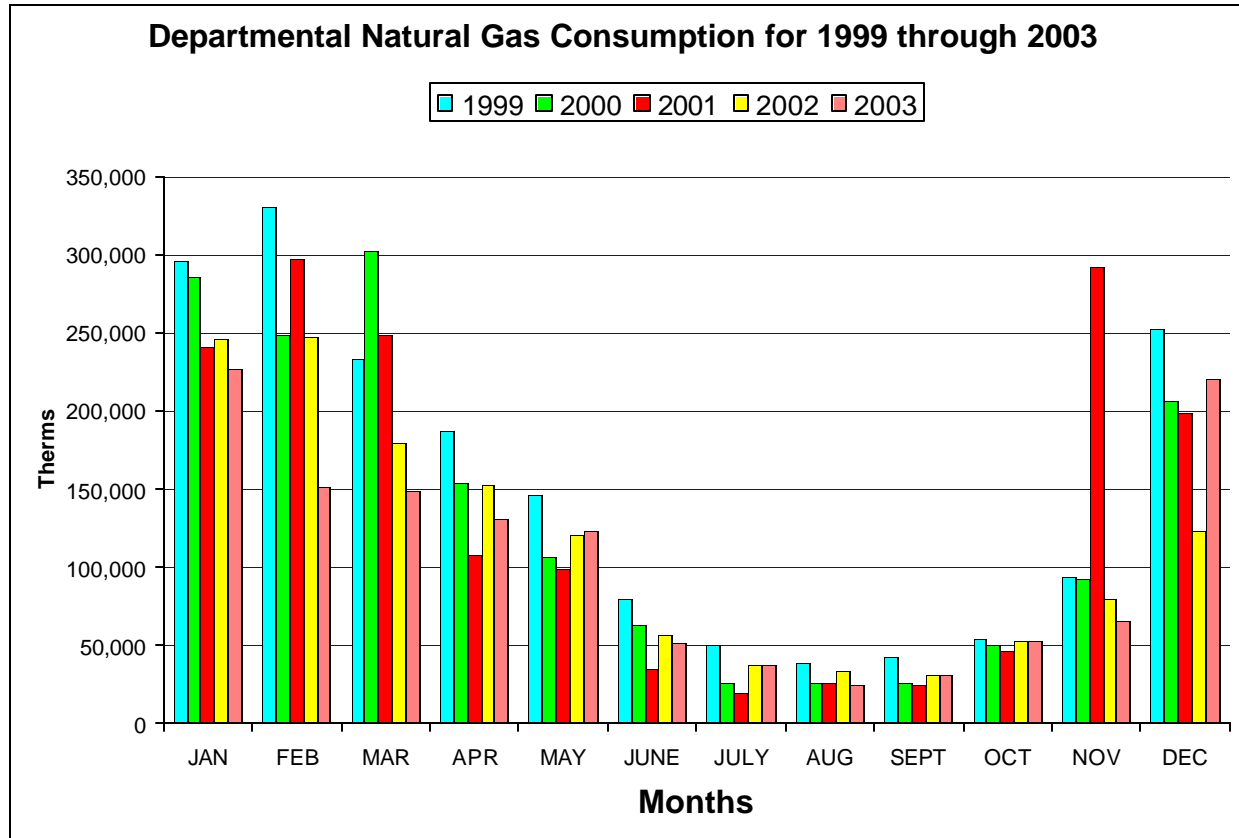




**Statewide Monthly Electricity Consumption**

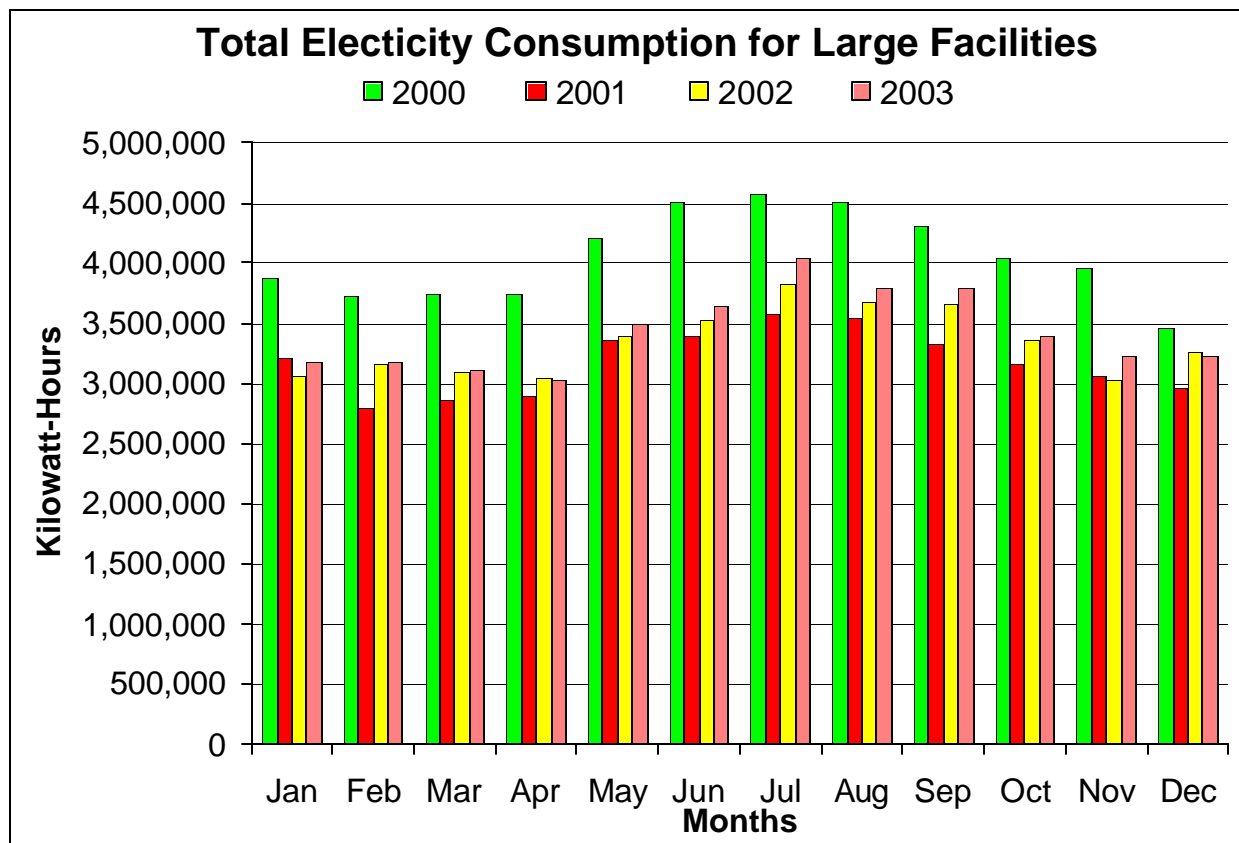
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
<b>1999</b>	15,977,649	16,455,598	21,594,016	18,640,962	20,991,202	33,927,891	32,736,951	20,434,049	24,780,449	27,907,822	26,177,770	26,893,266
<b>2000</b>	23,029,237	19,971,022	38,089,647	33,517,413	38,741,696	35,328,206	25,841,990	20,294,892	17,939,252	20,808,547	19,408,094	27,899,637
<b>2001</b>	22,595,089	17,464,201	21,933,925	20,384,830	22,253,180	21,308,885	20,916,509	18,860,023	18,485,659	21,569,041	17,832,076	19,580,088
<b>2002</b>	20,935,395	16,456,610	17,486,772	19,464,606	19,009,953	18,985,948	18,054,241	18,084,314	19,304,947	18,056,997	14,473,415	14,324,478
<b>2003</b>	18,776,992	12,384,476	15,670,712	14,018,609	16,210,072	15,668,057	15,048,021	17,467,364	19,562,646	18,387,433	17,837,555	18,119,195

## Statewide Monthly Natural Gas (Therms) Consumption: 1999 through 2003

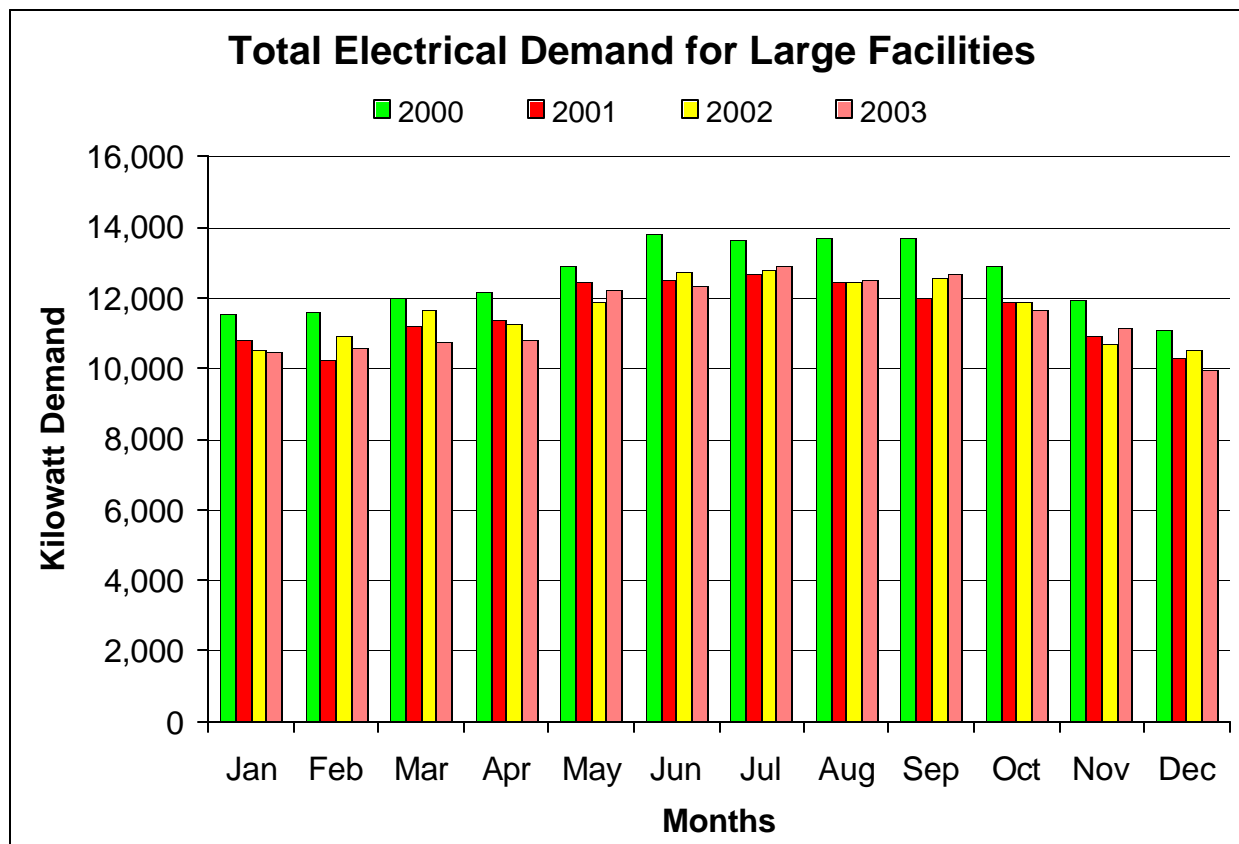


	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1999	295,421	329,725	233,633	187,162	145,702	79,393	50,765	38,398	42,246	54,155	93,548	251,747
2000	284,955	248,444	302,627	154,104	106,902	63,073	25,805	25,644	26,101	50,351	92,768	206,259
2001	240,465	297,504	248,658	107,135	99,427	34,469	19,055	25,918	24,931	45,827	291,543	198,244
2002	246,132	247,040	179,511	152,137	120,037	56,484	37,419	33,132	31,013	52,157	79,707	123,164
2003	227,152	151,163	148,856	131,122	122,773	51,791	37,049	24,537	31,047	52,231	65,168	220,204

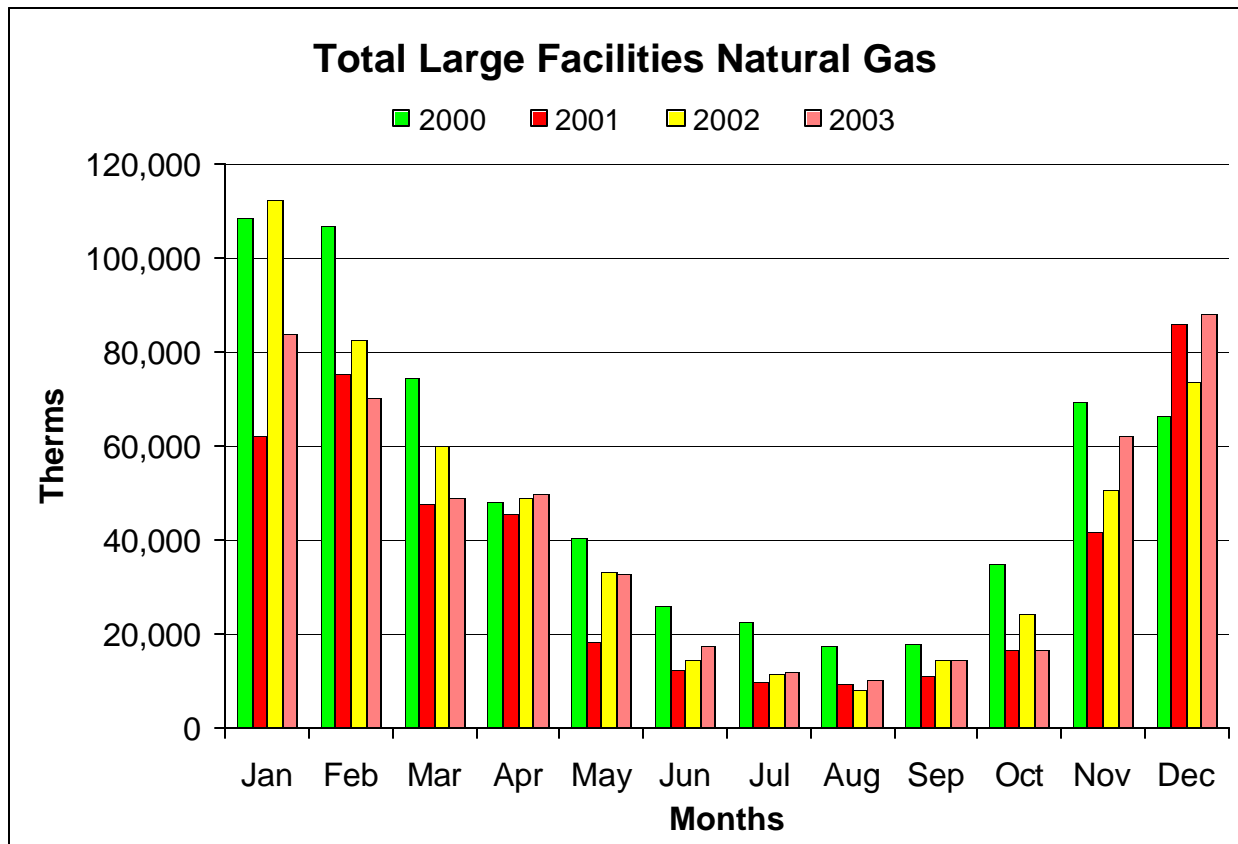
State wide totals for the 17 district and HQ facilities documented in pages 49 through 80. Since some of the facilities do not have historical data for 1998 and 1999, the charting starts in Calendar Year 2000. Interested parties can compare individual facility profiles with the average profiles for the 17 facilities.



Monthly Electricity Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	3,875,610	3,730,495	3,734,012	3,741,297	4,203,032	4,514,551	4,569,668	4,502,549	4,315,467	4,046,549	3,966,898	3,465,756
2001	3,217,618	2,795,739	2,868,600	2,889,411	3,353,174	3,390,291	3,568,565	3,545,440	3,330,794	3,167,676	3,058,637	2,958,211
2002	3,060,988	3,163,835	3,100,210	3,048,671	3,385,129	3,533,268	3,824,442	3,671,358	3,665,154	3,356,441	3,033,353	3,258,925
2003	3,175,518	3,171,571	3,105,035	3,028,977	3,491,253	3,641,341	4,045,236	3,790,051	3,793,143	3,388,566	3,233,813	3,228,462



Monthly Electricity Demand												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	11,539	11,584	12,021	12,195	12,932	13,833	13,655	13,704	13,704	12,881	11,914	11,072
2001	10,788	10,248	11,201	11,355	12,449	12,534	12,702	12,433	12,006	11,894	10,910	10,295
2002	10,527	10,923	11,634	11,257	11,887	12,732	12,772	12,451	12,563	11,893	10,695	10,522
2003	10,476	10,589	10,748	10,821	12,201	12,322	12,899	12,489	12,658	11,685	11,159	9,957



Monthly Natural Gas Consumption												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	108,689	106,589	74,325	48,032	40,608	25,888	22,509	17,552	17,909	35,108	69,442	66,288
2001	62,011	75,322	47,513	45,393	18,356	12,451	9,805	9,383	11,239	16,507	41,693	86,081
2002	112,297	82,750	60,050	49,116	33,336	14,626	11,565	8,225	14,342	24,102	50,789	73,733
2003	83,869	70,101	48,824	49,700	32,927	17,290	12,191	10,249	14,528	16,448	62,191	88,042

**Resource Center  
for  
Active Executive Orders, Management Memo, and  
Department directives and policies**

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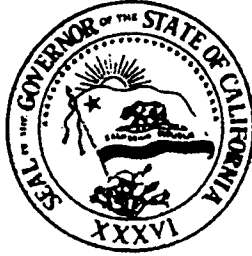
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EXECUTIVE DEPARTMENT  
STATE OF CALIFORNIA



EXECUTIVE ORDER W-83-94

WHEREAS, the State spends more than \$250 million annually for energy at State funded institutions; and

WHEREAS, energy costs at these institutions reduce funds available for essential services; and

WHEREAS, proven cost saving measures are available to significantly reduce these costs; and

WHEREAS, energy efficiency measures provide needed repairs and improvements to State facilities; and

WHEREAS, reduction in energy use has an environmental benefit, and reduces dependence on foreign energy sources; and

WHEREAS, the 1992-93 Energy Plan adopted by the California Energy Commission recommends that State government set an example of cost-effective energy efficiency in new and existing buildings;

NOW, THEREFORE, I, PETE WILSON, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

1. The following goals for State facilities are hereby established:
  - (a) Seek energy conservation improvements, and to that end, take actions leading to at least \$500 million dollars worth of life-cycle savings, during the period 1994-2004. The Department of General Services' Office of Energy Assessments shall work with the departments and agencies to establish individual departmental goals, based on each department's share of overall State energy costs.
  - (b) Implement all cost-effective energy efficient measures consistent with Department missions and available funding; Departments shall develop specific facility energy goals.
  - (c) Provide adequate and reliable energy infrastructure at all major State institutions.
  - (d) Include an energy management goal in all new facility designs.
2. All Cabinet Officers responsible for State facilities shall:
  - (a) Monitor monthly facility energy use and maintain energy use records of all major energy-using facilities; the Office of Energy Assessments shall establish standards for such energy data collection.

- (b) To the extent that they do not already have them, facilities shall install necessary energy use metering equipment to provide adequate information to allow good energy management practices.
  - (c) Maintain and update an agency-wide, five year Energy Management Plan. This plan is due to the Governor by June 1995.
  - (d) Designate energy managers responsible for carrying out energy management at all State facilities.
  - (e) Submit a report to the Governor, by June 30th each year, of the measures being taken to implement the agency's five year Energy Management plan.
- 3. The Department of Finance and the Department of General Services, shall develop the procedures and standard practices necessary to carry out these goals and actions.
  - 4. The Energy Policy Advisory Committee, as an advisory committee to the Department of General Services' Office of Energy Assessments, is established and includes the following agencies:
    - Department of Corrections
    - Department of Mental Health
    - Department of Developmental Services
    - Department of Transportation
    - Department of General Services
    - California Youth Authority
    - Board of Governors, Community Colleges
    - Regents of the University of California
    - Trustees of the California State University
  - 5. All agencies, departments, boards and commissions, the State Legislature and all Constitutional Officers are encouraged to comply with this Order to the greatest extent possible.
  - 6. State-leased facilities are to comply with this Order to the greatest extent possible, subject to the individual terms and conditions of the lease.
  - 7. This Executive Order supersedes Executive Order D-50-86.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 20th day of April 1994.

*Patricia Wilson*  
Governor of California

ATTEST:

*Tony Miller*  
Acting Secretary of State





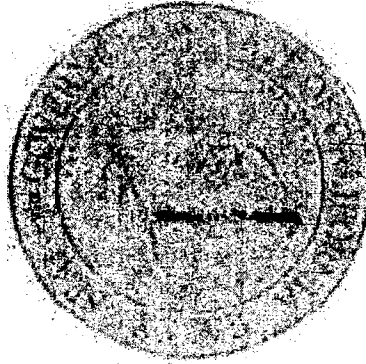
# **Executive Order**

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## **EXECUTIVE DEPARTMENT**

### **STATE OF CALIFORNIA**

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#### **EXECUTIVE ORDER D-14-00**

**by the**

**Governor of the State of California**

WHEREAS, there has been a combination of continued electric load growth and lack of proposed new generation facilities in California and the western United States during recent years; and

WHEREAS, restructuring of the electricity markets in California and the western United States has increased competition for electricity generated within California and has reduced the availability of electricity imported from other states and

WHEREAS, there have been a growing number of electricity supply alerts declared by the Independent Systems Operator, local electricity system reliability problems, and high electricity prices; and

WHEREAS, this circumstance may exist for the next two summers until new generation sources currently licensed become operational

NOW, THEREFORE, I, Gray Davis, Governor of the State of California, by the virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

- 1) All state agencies involved in the licensing of proposed electric power plants in

This EX Order is good for Background information only No Direct Action By Caltrans Is Expected

California will participate to implement the State's energy facility siting process in a timely manner without compromising the protection of public health and safety, the quality of the environment, or public participation. All agencies shall diligently review proposed license applications and provide timely comments to the lead agency within 100 days of the date the application is deemed to be complete.

- 2) The California Energy Commission shall propose legislation and/or regulations to prioritize and expedite the State Power Plant Licensing Process for the cleanest projects, those likely to result in the fewest or least public health, safety or environmental impacts and fully comply with all applicable federal, state, and local requirements. The California Energy Commission shall consult with the California Environmental Protection Agency, Resources Agency and the Governor's Office of Planning and Research in developing those regulations.
- 3) The President of the Public Utilities Commission, the Chairperson of the Electricity Oversight Board, the Chairperson of the Energy Commission, the Secretary of Resources Agency, the Secretary of the Environmental Protection Agency and the Director of the Governor's Office of Planning and Research shall comprise the Governor's Task Force on Energy Reliability to consider, coordinate and advise me on energy generation, reliability, siting, conservation, and efficiency policies.



IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 2nd day of August 2000.

*Gray Davis*

Governor of California

ATTEST:

*Bill Jones*

Secretary of State

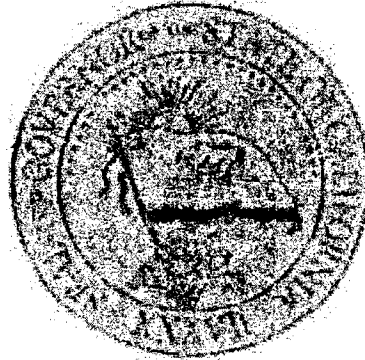
# Executive Order

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EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

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EXECUTIVE ORDER D-15-00

by the

Governor of the State of California

WHEREAS, the California Energy Commission has determined that California faces potentially severe shortages of electricity this summer that could extend into the summers of 2001 and possibly 2002; and

WHEREAS, the California Independent System Operator (ISO), a not-for-profit corporation, is responsible for managing the State electrical power grid; and

WHEREAS, during periods of peak demand the California Independent System Operator (ISO) may declare in progressive stages an Electrical Emergency, depending upon the amount of reserve generation available to the California electrical grid; and

WHEREAS, conscientious management practices at State facilities can reduce energy consumption; and

WHEREAS, during periods in which electrical demand puts strains on the electric systems of the state's utilities every effort to reduce energy demand and increase needed electricity supplies is critical to ensuring the stability of the electrical grid; and

WHEREAS, the state's effort to lead, shed electrical loads, and encourage load shedding by other consumers can have an important impact on statewide energy supplies and reduce the seriousness of some future situations; and

WHEREAS, if local and federal government facilities, business and residential consumers followed the States lead during an emergency and similarly reduced their power by two to three percent or more, many severe electricity emergencies could be averted

NOW, THEREFORE, I, Gray Davis, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

- 1) **Direct the State and Consumer Services Agency in consultation with the Department of General Services; the Business, Transportation and Housing Agency in consultation with the Department of Transportation; the Youth and Adult Correctional Agency in consultation with the Department of Corrections and the Youth Authority; and the Resources Agency in consultation with the Department of Water Resources to immediately institute energy conservation measures that will reduce energy consumption during stage II and stage III electrical emergencies.**
- 2) **Direct the aforementioned agencies and departments, under the leadership of the State and Consumer Services Agency to coordinate response efforts for any future electrical emergencies, to monitor the effectiveness of responses and to develop training programs for State facility managers.**
- 3) **Direct the State and Consumer Services Agency in consultation with the Department of General Services and the Office of Emergency Services to develop and implement a comprehensive communications strategy to ensure that critical information regarding any energy emergency accurately and quickly flows from the utilities to the agencies of State government and their facility managers.**



IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 2nd day of August 2000.

*Gray Davis*

Governor of California

ATTEST:

*Bill Jones*

Secretary of State

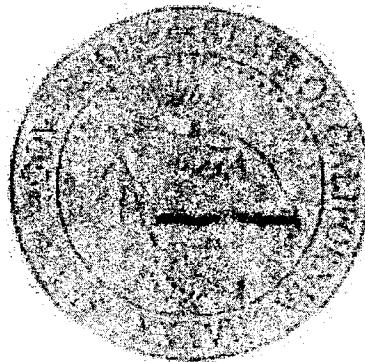
**Executive Order**

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**EXECUTIVE DEPARTMENT**

**STATE OF CALIFORNIA**

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**EXECUTIVE ORDER D-16-00**

**by the**

**Governor of the State of California**

WHEREAS, California is committed to providing leadership on energy, environmental and public health issues by implementing innovative and resource-efficient public building design practices and other state government programs that improve the lives of California's 34.5 million residents; and

WHEREAS, the state invests approximately two billion dollars (\$2,000,000,000) annually for design, construction and renovation, and more than six hundred million dollars (\$600,000,000) annually for energy, water, and waste disposal at state-funded facilities and

WHEREAS, a building's energy, water, and waste disposal costs are computed over a twenty-five year period, or for the life of the building, and far exceed the first cost of design and construction; and

WHEREAS, an opportunity exists for the State of California to foster continued economic growth and provide environmental leadership by incorporating sustainable building practices into the state capital outlay and building management processes; and

WHEREAS, sustainable building practices utilize energy, water, and materials efficiently throughout the building life cycle; enhance indoor air quality; improve employee health, comfort and productivity; incorporate environmentally preferable products; and thereby substantially reduce the costs and environmental impacts associated with long-term

**building operations, without compromising building performance or the needs of future generations; and**

**WHEREAS, the widespread adoption of sustainable building principles would result in significant long-term benefits to the California environment, including reductions in smog generation, runoff of water pollutants to surface and groundwater sources, the demand for energy, water and sewage treatment services, and the fiscal and environmental impacts resulting from the expansion of these infrastructures and**

**WHEREAS, it is critical that my Administration provide leadership to both the private and public sectors in the sustainable building arena**

**NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby establish a state sustainable building goal and issue this order to become effective immediately:**

- 1) The sustainable building goal of my administration is to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits to Californians.**
- 2) The Secretary for State and Consumer Services (hereinafter referred to as "the Secretary") shall facilitate the incorporation of sustainable building practices into the planning, operations, policymaking, and regulatory functions of State entities. The objectives are to implement the sustainable building goal in a cost effective manner, while considering externalities; identify economic and environmental performance measures; determine cost savings; use extended life cycle costing; and adopt an integrated systems approach. Such an approach treats the entire building as one system and recognizes that individual building features, such as lighting, windows, heating and cooling systems, or control systems, are not stand-alone systems.**
- 3) In carrying out this assignment, the Secretary shall broadly consult with appropriate private sector individuals and public officials, including the Director of the Department of Finance; the Secretary of Business, Transportation, and Housing; the Secretary for Education; the Secretary for Environmental Protection; the Secretary of Health and Human Services; and the Secretary for Resources. The Secretary shall submit a report to the Governor within six months of the date of this order, containing a recommended strategy for incorporating sustainable building practices into development of State facilities including leased property.**
- 4) Thereafter, on an annual basis, the Secretary shall report on the activities and on the efforts of all State entities under the Governor's jurisdiction to implement the Governor's sustainable building strategy. The Secretary shall**

devise a method for compiling such information and reporting it to the Governor and the Legislature.

- 5) **All State entities under the Governor's jurisdiction shall cooperate fully with the Secretary and provide assistance and information as needed.** The Regents of the University of California, Boards of Governors of Community College Districts, Trustees of the California State Universities, the State Legislature, and all Constitutional Officers are encouraged to comply with the Executive Order.
- 6) **Nothing in this Order shall be construed to confer upon any state agency decision-making authority over substantive matters within another agency's jurisdiction, including any informational and public hearing requirements needed to make regulatory and permitting decisions.**



IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 2nd day of August 2000.

*Gray Davis*

Governor of California

ATTEST:

*Bill Jones*

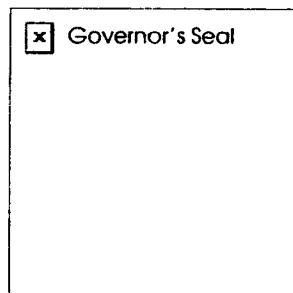
Secretary of State

# Executive Order

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## EXECUTIVE DEPARTMENT STATE OF CALIFORNIA

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### EXECUTIVE ORDER D-17-00

by the

Governor of the State of California

**WHEREAS**, California is the birthplace of the Information Age, and information technology, properly applied and managed, is essential for the success of our efforts to improve government services; and

**WHEREAS**, eGovernment is the provision of services and information by state government to the public through the Internet, integrated Internet based technologies, and voice and data technologies dependent on the Internet; and

**WHEREAS**, appropriate implementation of eGovernment provides for enhanced access to government information, delivery of government services and participation in the democratic process through secure electronic technology designed to protect privacy; and

**WHEREAS**, the coordinated development of eGovernment will act as a catalyst to reengineer current practices and aid State agencies and departments to design better ways to provide government services; and

**WHEREAS**, this Administration understands that a successful program depends on the development of well managed information technology projects and a statewide infrastructure that is compatible and allows the sharing of information between systems;

**NOW, THEREFORE, I, GRAY DAVIS**, Governor of the State of California, by virtue of the



power vested in me by the Constitution and the statutes of the State of California, do hereby issue this order to become effective immediately:

The Governor's Office shall work with the State and private sectors to assure that state agencies and departments implement electronic technologies that will allow the people of California to receive government services and interact with State government, including a statewide Internet portal that offers a single, convenient access point for state government information and services.

State agencies and departments shall, to the extent practical, integrate new and existing Internet applications into the State portal's software and network architecture.

To assure the adoption of best practices for information technology management and business processes enabled by rapidly changing technology, the Governor's Office shall consult with technology experts from the private sector, academic sector, non-profit organizations and other governments and communities.

The Governor shall appoint a Director of eGovernment who shall advise the Governor on eGovernment policy and shall coordinate eGovernment activities with the Department of Information Technology and the Governor's Office for Innovation in Government to ensure an expeditious and efficient implementation of eGovernment.

State agencies and departments shall submit a proposed eGovernment implementation plan to the Department of Information Technology and Director of eGovernment. These plans shall include a description of the most widely used services at each agency's departments, identify those best suited for electronic delivery, identify the population served by these services, and include a description of current or planned systems to measure the level of customer satisfaction with the identified services.

The Department of Information Technology is responsible for ensuring that the proposed implementation plans are consistent with the State's Architecture and Implementation guidelines published by the Department of Information Technology. These proposed plans shall be updated at least once per year by the agencies. The Department of Information Technology shall provide technical and legal assistance to the agencies and departments as required for the preparation of these proposed plans.

The Department of Information Technology shall continue to coordinate agency reporting to provide a comprehensive account of information technology activities and systems for all reportable projects and will deploy oversight contractors whenever necessary to ensure independent review of critical state information technology projects.

To ensure the comprehensive and accurate reporting of State information technology efforts, and to assist state agencies and departments in understanding and compliance with administrative and statutory requirements for information technology, the Department of Finance Office of State Audits and

Evaluation shall perform or cause to be performed consultative reviews of State agency and department information technology activities when requested by both the directors of the Department of Finance and the Department of Information Technology. The results will be provided to the Department of Finance, the Department of Information Technology, and to the director of the reviewed department.

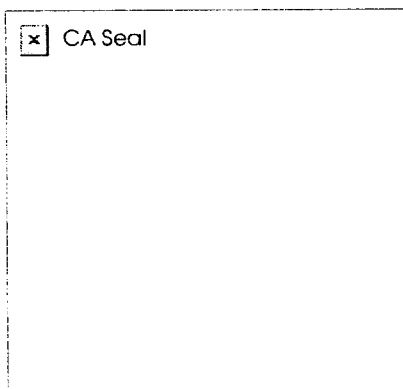
The Department of Information Technology, the Department of Personnel Administration and the State Personnel Board shall work in partnership to develop methods to address the recruitment, retention, training and personal development of information technology professionals.

The Department of Information Technology, the Department of General Services and the Department of Finance shall work cooperatively to evaluate and make recommendations to improve the budget, funding, procurement, approval and oversight systems and processes governing information technology projects, and to ensure that policies for improving information technology acquisition and contracting are implemented and enforced through Department of General Services procedures, practices and guidelines for departments.

By June 1, 2003, the Director of eGovernment shall provide to the Governor a status report on eGovernment activities given the ensuing changes in technology and the State's information technology infrastructure.

Executive Order D-3-99 is hereby rescinded.

This Executive Order shall sunset July 1, 2003.

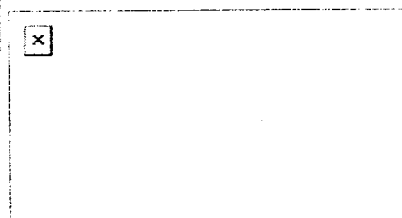


**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed



this 8th day of September 2000.  
Governor of California

**ATTEST:**



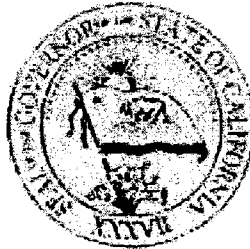
Secretary of State

**Exec Order**

**EXECUTIVE DEPARTMENT**

**STATE OF CALIFORNIA**

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**EXECUTIVE ORDER D-36-01**  
by the  
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, the shortage of available electricity supply will continue to cause rolling blackouts throughout California affecting millions of Californians; and the imminent threat of disruption of electrical power to California's schools, hospitals, homes businesses and roadways constitutes a condition of extreme peril to the safety of persons and property; and

WHEREAS, the State has implemented a comprehensive conservation and demand reduction campaign involving all segments of the public and private sectors, yet all reasonable conservation, allocation, and load curtailment measures will not eliminate this energy supply emergency until sufficient new supply can be brought on line; and

WHEREAS, this energy supply emergency requires the State to seek expertise in expediting the siting of new powerplants and emergency peaking facilities, to increase the output from or restarting existing powerplants in order to ensure reliability of the grid and delivery of power in the State.

WHEREAS, this emergency has caused wholesale power suppliers to discontinue energy sales to these utilities, resulting in the State assuming the obligation to procure electricity for the end use customers of these utilities thereby necessitating the State to acquire the services of energy consultants, bond counsel, legal and financial advisors; and

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the Department of Water Resources (DWR) facilitate the expeditious implementation of the conservation initiatives enacted by Senate Bill 5X and Assembly Bill 29X of the 2001-02 First Extraordinary Session and the 20/20 Program established by Executive Order D-30-01. Revenues from the Electric Power Fund shall be used to fund these essential activities.

IT IS FURTHER ORDERED that DWR retain appropriate expert resources for the implementation and financing of its power purchase program as enacted by Assembly Bill 1X of the 2001-02 First Extraordinary Session.

IT IS FURTHER ORDERED that the State and Consumer Services Agency (hereinafter "Agency"), the Department of General Services (hereinafter "DGS"), and the Energy Commission implement, coordinate, and promote an aggressive energy conservation and demand reduction initiative involving leadership from the State and local governments, schools, and the commercial, industrial, and agricultural sectors, as well as organizers for broad community involvement statewide.

IT IS FURTHER ORDERED that the DWR and the Department of Finance (hereinafter "DOF") conduct essential and critical activities on an ongoing basis, including energy demand forecasts, energy cost forecasts, financial analysis, rate modeling and design, and other activities related to the State's negotiations with investor-owned electric utilities and power suppliers, to ensure a sufficient supply of power at just and reasonable prices to meet the power demand of California consumers.

IT IS FURTHER ORDERED that the DGS provide essential legal and related services to advise and assist the State in pending rate litigation, its negotiations with the investor-owned electric utilities related to, among other things, the utilities' undercollections, drafting of legislation and contracts related to the acquisition of power, and matters before the Federal Energy Regulatory Commission related to, among other things, wholesale prices charged by power suppliers.

IT IS FURTHER ORDERED that the Energy Commission act as the project manager in coordinating and ensuring timeliness in the state permitting, siting, finance, design, and construction or restart of electrical generating facilities.

IT IS FURTHER ORDERED that unless otherwise specified above, revenues available in the Disaster Response-Emergency Operations Account of the Special Fund for Economic Uncertainties shall be used to fund all essential activities of the Agency, DGS, DWR, DOF, and Energy Commission pursuant to this order.

IT IS FURTHER ORDERED that the Agency, DGS, DWR, DOF, and Energy Commission shall enter into contracts in furtherance of this order as expeditiously as possible, and is hereby authorized to do so, notwithstanding the provisions of the Government Code and the Public Contracts Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, which provisions are suspended pursuant to Government Code Section 8571 to the extent that they would prevent, hinder, or delay the prompt mitigation of the effects of this emergency. Moreover, any agreement commenced after January 17, 2001, that would otherwise be authorized under this order is hereby affirmed and ratified.

IT IS FURTHER ORDERED that this order shall expire on December 31, 2001, unless extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.



**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the twenty-fifth day of May 2001.

/s/ Gray Davis

Governor of California

ATTEST:

/s/ Bill Jones

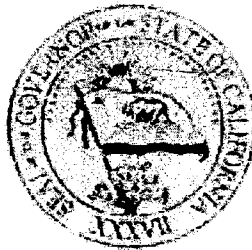
Secretary of State

**Exec Order**

**EXECUTIVE DEPARTMENT**

**STATE OF CALIFORNIA**

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**EXECUTIVE ORDER D-38-01**  
by the  
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the shortage of electricity will continue to cause blackouts throughout California, endangering public health and safety; and

WHEREAS, the threat of frequent and widespread blackouts requires a system to assure early and effective notice to the public and public safety agencies so that appropriate preparations may be taken to protect public health and safety, minimize economic disruptions and prevent harm to property and the environment;

NOW, THEREFORE, I, GRAY DAVIS, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this order to become effective immediately:

IT IS ORDERED that the California Independent System Operator shall, no later than June 15, 2001:

- \* forecast to the general public the potential for rolling blackouts 48 hours in advance and updated 24 hours in advance, based upon such factors as weather, outages, supply and demand;

- \* provide frequent updates to the public during periods of forecasted electricity emergencies; and

\* notify utilities and public safety agencies at least one hour in advance of any firm load curtailment;

IT IS FURTHER ORDERED that each utility (the term "utility" includes investor owned utilities, municipally owned utilities and municipal utility districts) required to reduce its electricity output to customers shall notify the California Office of Emergency Services, the public, media and public safety agencies within its jurisdiction no less than one hour in advance as to the time and location where the anticipated blackout will occur, providing common geographical boundaries, grid or block numbers, maps or similar identifying information so as to be readily understood by the public and affected customers;

IT IS FURTHER ORDERED that each utility subject to the curtailment of electricity output to its customers shall maintain an updated listing available to the public, media, and its customers identifying all service areas designated for, or likely to experience, future blackouts, providing where possible the order in which future blackouts will occur;

IT IS FURTHER ORDERED that each utility subject to the curtailment of electrical power output to its customers shall provide each public safety agency within its jurisdiction, upon request, such information regarding the utility's service areas, grid and infrastructure as the public safety agency deems necessary to plan its responses to blackouts;

IT IS FURTHER ORDERED that the Office of Emergency Services, in consultation with the Public Utilities Commission, utilities, state and local public safety agencies, local governmental entities, and the media, shall develop a plan no later than June 15, 2001, providing specific direction for implementation of this Executive Order, including, but not limited to:

- \* specifying the information that the utilities are to provide to public safety agencies, the media and the public, and the form and procedures for providing such information;

- \* identifying and assuring the safety of utility customers who are particularly vulnerable to blackouts, such as hospitals, nursing homes, schools, buildings in excess of 80 feet in height, day-care centers; persons on life-support and water pumping stations;

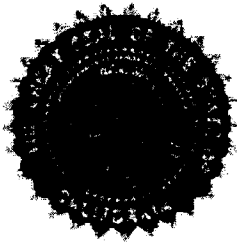
- \* providing public safety agencies with the identity and location of facilities exempted from blackouts;

- \* utilizing the State's emergency public information systems to provide timely and widespread notification to the public of imminent and potential future blackouts; and

\* assuring the confidentiality of customer and business records.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code section 8550 et seq., as necessary to mitigate the effects of the emergency.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.



**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the fifth day of June 2001.

/s/ Gray Davis

Governor of California

ATTEST:

/s/ Bill Jones

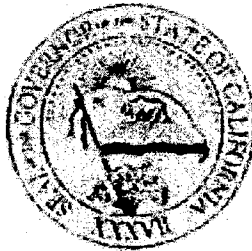


**Exec Order**

**EXECUTIVE DEPARTMENT**

**STATE OF CALIFORNIA**

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**EXECUTIVE ORDER D-39-01**  
by the  
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the shortage of electricity will continue to cause rolling blackouts throughout California, endangering public health and safety, threatening property, the environment and economic disruption, and affecting millions of Californians; and

WHEREAS, during this period, all reasonable conservation, allocation and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, emergency load curtailment programs reducing electrical demand during Stage II and Stage III Emergencies can avoid or mitigate blackouts; and

WHEREAS, many commercial, industrial and other large users of electricity will agree to reduce their energy consumption during critical periods of high demand if provided financial incentives; and

WHEREAS, consolidation of the overlapping and inconsistent load curtailment programs currently authorized or offered by the California Independent System Operator, the Public Utilities Commission and electric corporations will increase customer understanding and participation, and generate maximum benefits from the funding provided by the Department of Water Resources.

NOW, THEREFORE, I Gray Davis, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California,

including the California Emergency Services Act, do hereby issue this order to become effective immediately:

IT IS ORDERED that the Department of Water Resources and California Independent System Operator shall implement voluntary, emergency load curtailment programs for commercial, industrial and other large customers of electric corporations for Summer 2001 and Summer 2002. The Department of Water Resources will finance these programs compensating participating customers in exchange for the customers' agreeing to reduce their electricity consumption, upon notification, during a Stage II or Stage III Emergency.

IT IS FURTHER ORDERED that the Department of Consumer Affairs shall incorporate these programs into its media awareness campaign for maximum customer participation.

IT IS FURTHER ORDERED that this order shall expire on October 31, 2002, unless revoked, modified or extended by further Executive Order responding to the continued need for emergency action to deal with the energy emergency, or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code section 8550 et seq., as necessary to mitigate the effects of the emergency.

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.



**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this the 9th day of June 2001.

/s/ Gray Davis

Governor of California

ATTEST:

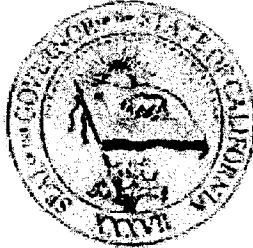
/s/ Bill Jones

**Exec Order**

**EXECUTIVE DEPARTMENT**

**STATE OF CALIFORNIA**

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**EXECUTIVE ORDER D-40-01**  
by the  
Governor of the State of California

WHEREAS, on January 17, 2001, I proclaimed a State of Emergency to exist due to the energy shortage in the State of California; and

WHEREAS, there is a high probability that the electricity supply shortage will continue through at least October 31, 2001, causing rolling blackouts throughout California which endanger public health and safety, threaten property, the environment and economic disruption, and affect millions of Californians; and

WHEREAS, during this period, all reasonable conservation, allocation, and service restriction measures will not alleviate this energy supply emergency; and

WHEREAS, to alleviate this energy supply emergency, power generators must be encouraged to utilize their maximize generation capacity;

NOW, THEREFORE, I, Gray Davis, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, including the Emergency Services Act, do hereby issue this order to become effective immediately:

IT IS ORDERED that, in order to avoid blackouts and minimize operation of backup diesel-fired generators, local air districts are directed to allow natural gas-fired power plants to operate in excess of their hourly, daily, quarterly and/or annual emission limitations if operated: (a) to sell power to the California Department of Water Resources or to a utility located in California; (b) to serve an operating utility's own load; or (c) as dispatched by the California Independent System Operator (ISO). The term "utility" includes investor owned utilities, municipally owned utilities and municipal utility districts.

IT IS FURTHER ORDERED that the hours operated under such conditions shall not be counted toward the hourly, daily, quarterly and/or annual operating limits or hourly, daily,

quarterly and/or annual emission limits of the plant's permit for this or any other year if the plant's operator pays mitigation fees to the local air pollution control district or air quality management district of \$7.50 per pound of oxides of nitrogen (NOx) and \$1.10 per pound of carbon monoxide emitted.

IT IS FURTHER ORDERED that during the time a power plant is operating under any of the above conditions, the facility shall not be subject to any provision limiting its hours of operation or generation capability, or imposing conditions or penalties related to its additional hours of operation or power generation, whether imposed by the California Health and Safety Code, the California Code of Regulations, a local air pollution control or air quality management district rule or regulation, or any permit.

IT IS FURTHER ORDERED that emissions resulting from the operation of a power plant in accordance with this order shall not be considered in determining whether the facility has exceeded its daily, quarterly or annual emissions allocation in this or any other year, to the extent any such limit applies.

IT IS FURTHER ORDERED that the California Air Resources Board is directed to work with USEPA to ensure that power plants desirous of operating under this order obtain the necessary approvals from the U.S. Environmental Protection Agency.

IT IS FURTHER ORDERED that this order shall expire on October 31, 2001, unless revoked, modified or extended by further executive order responding to the continued need for emergency action to deal with the electricity emergency or unless terminated by proclamation of the Governor or concurrent resolution of the Legislature that the state of emergency has ended.

The activities herein are authorized to be carried out pursuant to the Emergency Services Act, Government Code section 8550 et seq., as necessary to mitigate the effects of the emergency

I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.



**IN WITNESS WHEREOF**, I have hereunto set my hand and caused the Great Seal of California to be affixed this 11th day of June 2001.

/s/ Gray Davis

Governor of California

ATTEST:

/s/ Bill Jones

# MANAGEMENT MEMO

SUBJECT:  
COMPREHENSIVE ENERGY MANAGEMENT IN STATE FACILITIES DURING ELECTRICAL  
EMERGENCIES

REFERENCES:  
SUPERSEDES MANAGEMENT MEMOS 99-13, 00-06, 00-13 AND 01-01

NUMBER:

01-05

DATE ISSUED:

04/19/01

EXPIRES:

Until Superseded

ISSUING AGENCY:

DEPARTMENT OF GENERAL  
SERVICES

This Management Memo supersedes and amends previous Management Memos on  
Energy Management to better reflect ongoing Stage 3 Electrical Emergencies.

## INTRODUCTION

The State of California is facing an unprecedented period of electricity shortages.

During periods in which electrical demand puts strains on the electric systems of the state's utilities, the California Independent System Operator (CAISO) may declare an Electrical Emergency. When the CAISO declares an Electrical Emergency, the Department of General Services/Office of Energy Assessments (DGS/OEA) will notify all departments, universities and community colleges and provide appropriate conservation information and actions to be taken as outlined in this DGS Management Memo. This Management Memo may be downloaded from the DGS Energy Website at [www.dgs.ca.gov/energy](http://www.dgs.ca.gov/energy).

Notification will be sent from DGS Energy Info via E-mail/E-Pager and other means to the "Primary Contacts" (department's Energy Management Teams) identified and submitted by Departments to DGS/OEA. A department's "Primary Contact" list should include Directors, Chief Deputy Directors, Chief Information Officers, Communication Officers, other Technical Staff, Facility Managers, Plant Managers, Energy Managers, Cogeneration Operators, and Third Party Cogeneration Operators. This list is not necessarily inclusive and should include back-ups or other personnel based on an individual department's determination of how to alert and mobilize the staff within their own organization. "Primary Contacts" should in turn alert personnel under their responsibility as outlined/described in their internal Electrical Emergency Management Plan called for by Executive Order D-15-00. DGS Energy Info notifications may be confirmed at the DGS website [www.dgs.ca.gov/energy](http://www.dgs.ca.gov/energy).

Electrical Emergency information received from other sources (CAISO, Office of Emergency Services, and local utility representatives) should be carefully examined. Information sent by DGS/OEA to departmental "Primary Contacts" should be forwarded in its entirety, without changes, to other staff within their department. If departments, by nature of their operations, need to take additional conservation measures above those outlined by DGS/OEA, that information should also be communicated.

CAISO declarations can be made in progressive steps depending upon the amount of reserve generation available to the California electrical grid. Departments are required to comply, to the fullest extent possible, with all direction/instruction provided by DGS/OEA at each progressive stage of Electrical Emergency. CAISO Stages are as follows:

## STATE ADMINISTRATIVE MANUAL

Classification/ISO Notice	Condition/Description
Standard Operations	<ul style="list-style-type: none"><li>• No energy emergency exists</li></ul>
Stage 1 Emergency	<ul style="list-style-type: none"><li>• ISO declares a Stage 1 Emergency.</li><li>• Emergency: Less than 7% operating reserves forecasted in REAL TIME. Customers with voluntary interruptible contracts should prepare for <u>potential</u> interruption.</li></ul>
Stage 2 Emergency	<ul style="list-style-type: none"><li>• ISO declares a Stage 2 Emergency, but does not call on interruptibles (Phase1).</li><li>• ISO declares a Stage 2 Emergency and calls on interruptibles and warns of a potential Stage 3 Emergency. (Phase 2).</li><li>• Emergency: Less than 5% operating reserves forecasted in REAL TIME. An interruption is in effect for voluntary interruptible loads only.</li></ul>
Stage 3 Emergency	<ul style="list-style-type: none"><li>• ISO declares a Stage 3 Emergency in order to get additional resources; rotating outages may occur or are occurring.</li><li>• Emergency: Less than 1½% operating reserves forecasted in REAL TIME. All available interruptible load is called for interruption. Firm service customers (customers not on interruptible tariff) will also be called for interruption.</li></ul>
Extended Uncontrolled Outages	<ul style="list-style-type: none"><li>• Due to loss of system integrity or natural disaster, communication systems may be inoperable. Time to restoration of service unknown.</li></ul>

### **UPDATING EMERGENCY PREPAREDNESS PLANS**

- Agencies/departments should immediately update their Emergency Preparedness Plan to ensure blackout issues are addressed.
- Building Managers are responsible for addressing electrical disruptions within State-owned facilities. In the case of leased facilities, the department Business Services Officer (BSO) should work with the responsible person (s) in each leased facility. However, agency secretaries and department directors are ultimately responsible for the conduct of their employees; it is their responsibility to determine what actions are appropriate for their own employees. This also applies to decisions regarding whether it is appropriate for the public to leave the facility during a blackout.
- These recommendations are intended to protect employees and the public in State facilities in the event of an electrical outage, but it is recognized that they may not apply in all locations.

#### **Emergency Preparedness Plans should address the following issues:**

1. Location of employees during outages: Each department or tenant should assess where employees should relocate, or whether employees should stay put, if a blackout occurs. Generally, areas with the most natural light are best. It is State policy that employees remain at work to ensure their safety. If the building is experiencing a power outage, it is likely that the immediate area around the building has also; relocating to areas outside of the building could be less desirable. Remember that rolling blackouts are intended to be temporary situations, lasting roughly 1 hour and fifteen minutes.
2. Accessibility issues: Plan for accommodating employees who have limited mobility to ensure they will be able to safely move about or exit the building in the event of a blackout. This may include allowing them to leave early to avoid potential risk associated with exiting the facility during a blackout, or relocating their workspace to an area where such risk can be avoided.
3. Backup generation: The Building Manager or BSO shall ensure that any backup generator sources (e.g., UPS, electrical emergency generators) are tested and readily available to power critical life-safety functions of the building. In the case of battery-operated devices, batteries should be checked and fully charged; in the case of diesel generators, tanks should be topped off and ongoing testing scheduled. Back-up radios should also be tested.

## STATE ADMINISTRATIVE MANUAL

4. Electrical Outage Contact Lists: The Building Manager/BSO/Facility Manager and Agency Secretaries/Department Directors should ensure that their phone trees are current and that a complete and continuously updated list of emergency contacts and people who regularly work after normal business hours is distributed, as appropriate.
5. Building security: Each agency and department needs to ensure the local number of the appropriate law enforcement agency is readily available to staff, to assist, if necessary, during a rotating outage and when power is restored or to report on conditions and the safety of employees. Security plans should also include provisions for the safety of employees who are responsible for handling cash in public areas, as well as plans for securing the cash.
6. Electrical Outage Supplies: Supply areas should be fully stocked and the room locations published and accessible to staffs who require access. Recommended supplies include flashlights, battery powered radios, extra batteries, warm blankets, and some drinking water. If these supplies currently are stocked, their expiration dates should be checked.
7. 24-7 operations: Special considerations may be required for State operations that run 24 hours a day, 7 days a week. Building Managers and BSOs should ensure that this notice goes to all tenants and staff.

## **CONSERVATION ACTIONS REQUIRED AT EACH CAISO STAGE**

### **STANDARD OPERATIONS AND STAGE 1 PROCEDURES:**

State facilities should be operated in an energy efficient manner. Under Standard Operations and Stage 1 routine energy conservation measures described below should be followed.

#### **GENERAL**

- Department Directors or their designees should appoint Energy Coordinators for each location their department occupies. Energy Coordinators should work in conjunction with the Facility Manager to carry out Standard Operations Procedures.
- At the end of the workday or when not needed, employees should turn off lights, computers, monitors, printers, and scanners, except for equipment designated as 24/7 or for which there is a specific need for after hours operations. (E.g., e-mail mail servers, fax machines, or other essential equipment.)

#### **HOURS OF OPERATION**

- State owned and leased buildings will be operational from 6:00 AM through 5:30 PM. All non-essential lighting and other electrical loads shall be minimized outside of normal building hours. Agencies are expected to make a reasonable determination as to what functions must continue outside of these hours.
- Facilities/organizations with employees on alternate workweek schedules will need to accommodate these schedules even if outside of normal hours of business.

#### **BUILDING HEATING AND COOLING SYSTEMS**

- Interior air temperature set-point shall be maintained at 68 degrees F in winter and 78 degrees F in summer unless such a temperature in a particular job or occupation may expose employees to a health and safety risk. Employees should consider dressing appropriately in anticipation of decreasing/increasing office temperatures.

## STATE ADMINISTRATIVE MANUAL

- Building temperatures shall be allowed to fluctuate within an acceptable range in order to avoid wasteful over-control patterns. Simultaneous or alternate heating and cooling operations to maintain exact temperature in work areas shall be avoided. This range may vary with each building's control system; the target range is plus or minus four degrees F from the temperature set-point, for a total fluctuation of eight degrees F.
- Windows and doors will be kept closed to prevent loss of heated or cooled air, but the local unit manager should retain authority to permit windows and doors being open for a reasonable time to fit individual circumstances, such as the adequacy of air circulation.
- Whenever possible, building operators shall operate and adjust controls to get optimum advantage from outside temperatures for meeting cooling demand (e.g., using outside air economizers). Avoid operating chillers and compressors where possible. All "pre-cooling" options for buildings shall be employed.
- Domestic hot water temperatures shall not be set above 105 degrees F unless this conflicts with a Code requirement for your facility. Building operators and tenants shall take every opportunity to minimize hot water usage.<sup>1</sup>
- For warm weather months, blinds and window coverings on all south and west-facing windows should be closed to reduce solar heat gain to cool the building, if needed. For cool weather months, blinds and window coverings on all south and west-facing windows should be opened to make use of solar heat gain to warm the building, if needed.
- Data Center Operations should maintain ambient temperature settings at manufacturer specification maximums.

### **LIGHTING**

- All lights shall be turned off in unoccupied rooms, computer equipment rooms, and storage areas at all times. If installed, occupancy sensors shall be enabled.
- Employees should turn off lights when not in use.

### **OTHER REDUCTIONS IN ELECTRICAL DEMAND**

- All video monitors and personal computers shall be set for automatic power-down ("sleep") mode after five minutes of non-operation. (All Energy Star monitors should have this feature available and can be turned on using the "Display" option of the desktop "Control Panel.") Note that the installation of screen savers by itself does not reduce power consumption and is not a substitute.
- All copiers and printers that have an automatic power-down or "Energy Saver" feature shall have this feature enabled.

## **STAGE 2 PROCEDURES:**

Under a CAISO Stage 2 declaration, utility service to interruptible loads is subject to curtailment. State agencies are directed to adopt conservation measures to the degree possible at each state site without unduly compromising agency operations. All Standard Operations and Stage 1 procedures shall remain in place. In addition, implement the following conservation measures.

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<sup>1</sup> Facility managers concerned with the possibility of problems associated with Legionella bacteria (i.e., "Legionnaires' Disease") in their water systems should investigate maintenance and water treatment options to control this bacterium. Please note that simply elevating hot water temperatures alone will not control Legionella unless system temperatures are maintained at 132 degrees F or higher, which creates a high danger of scalding.



## STATE ADMINISTRATIVE MANUAL

### LIGHTING

- Overhead lighting shall be reduced as much as possible without creating unsafe conditions or interfering with the performance of duties. Such reduction can be achieved by operating half-bank switches, where installed. Use task lighting, or rely on daylighting unless this results in additional solar heating of the building.
- Custodial personnel shall turn lights on only as needed and turn lights off when their work is done. Where possible, custodial personnel shall work in teams to complete cleaning on each floor of multi-story buildings before turning on lights on another floor.
- Security and safety lighting shall be held to the lowest acceptable levels. Decorative lighting, inside and out, shall be switched off.

### OTHER REDUCTIONS IN ELECTRICAL DEMAND

- Use of photocopiers and printers shall be consolidated. Where possible, redundant printers and copiers shall be turned off and work shall be directed to nearby machines. Major copy and print jobs should be postponed when possible.
- Unplug refrigerated water coolers and drinking fountains where feasible.
- Minimize the use of non-essential electrical appliances (e.g., microwaves, toaster ovens, coffee machines, and personal space heaters) where appropriate.

### OPERATION OF ONSITE GENERATION EQUIPMENT

- State facilities that have cogeneration or distributed generation equipment should stand by to staff and operate this equipment, if it is not operating in the normal course of business. If electrical system conditions continue to deteriorate, the Department of General Services may call on you to operate the equipment on short notice. This specifically refers to equipment that (a) has a current operating permit from the local Air Quality Management District and any other interconnection and/or operating permits normally required and (b) has trained operating personnel available to run it. **Generation equipment is not included in this directive.**
- In response to a CAISO request, the Department of General Services may direct state facilities to operate their generation equipment, as described above, to provide support to the grid.
- State facilities that have licensed cogeneration or distributed generation equipment that is not available for operation shall take all prudent steps to ready this equipment for operation, as above. DGS/OEA is available for consultation on accomplishing this directive.

### STAGE 3 PROCEDURES:

Under a Stage 3 declaration, electricity supply is critically short and more drastic actions are called for. The CAISO declares a Stage 3 to secure additional resources, rotating outages may occur or are occurring. Under a Stage 3, the CAISO may direct the electric utilities to cut firm customer load by initiating rotating outages, in accordance with each utility's Electrical Emergency Plan. The CAISO will resort to this step only when voluntary customer conservation efforts and curtailment of interruptible load are insufficient to reduce demand to a level that can be met by the available supply of power with appropriate safety margins. Such action may be necessary in order to avoid a catastrophic collapse of the interconnected electrical system. In a rotating outage, selected distribution circuits are sequentially shut off in a controlled fashion for a period of approximately one hour and fifteen minutes, in order to bring electricity demand on the system to within acceptable operational limits. Each section of the grid, once shut off and then restored to service, is placed at the bottom of the queue as the next section is turned off in the sequence.

## **STATE ADMINISTRATIVE MANUAL**

It is crucial to note that (1) the rotating outages are limited in duration, lasting approximately one hour and fifteen minutes, and (2) they will involve the minimum amount of interruption to service necessary to preserve the overall operation of the electricity system. Barring specific instructions to the contrary and to the extent possible, State agencies shall keep employees at their workplaces to ensure their safety and maintain normal business hours during rotating outages.

For state agencies, this means we must take actions that are likely to impinge on business operations. All Stage 1 and Stage 2 procedures shall remain in place. In addition, implement the following conservation measures. Any conservation measures that can be implemented during this period will ease the load on the system and minimize the depth and duration of the firm service outages.

### **GENERAL**

- Building Managers and Business Services Officers (BSO) should engage their Emergency Response Plan. The situation will vary building by building. Use your judgment as you would in any emergency.
- Evaluate all remaining loads and shut down everything that is not critical to maintaining basic business operations.

### **COMPUTERS AND IT EQUIPMENT**

- Turn off personal computers and monitors that are not essential to conducting state business. Each work place should maintain at least one computer and its e-mail server on in order to receive critical communications. The intended recipient's email address should be on the agency's e-mail contact list submitted to the DGS Energy Control Center for energy emergency information and notification.
- Turn off monitors for file and application servers when not used.
- Turn off test or laboratory equipment that is not essential.
- Turn off other non-essential IT equipment, including printers, scanners, copiers, and other peripheral equipment.

### **LIGHTING**

- Reduce lighting loads in work areas to the minimum acceptable levels consistent with personal safety and security. Exercise caution to ensure that reduced lighting levels do not create an unsafe work environment. Because of the potential impact of reduced illumination levels, ensure that all walkways and corridors are free from obstructions and tripping hazards.

### **HEATING AND COOLING SYSTEMS**

- All electric heating and HVAC loads will be reduced to the minimum levels required for health and safety.

### **OTHER ELECTRICAL LOADS**

- Severely limit all non-essential electrical appliances (e.g., coffee machines, microwaves, toaster ovens, and personal space heaters). Do not turn off refrigerators.

## STATE ADMINISTRATIVE MANUAL

### **IF YOUR FACILITY EXPERIENCES AN OUTAGE, TAKE THE FOLLOWING STEPS:**

- Turn off any equipment that was still in service (except IT equipment that is operating on its own uninterruptible power supplies) in order to avoid power surges when service is restored. Leave a task light turned on so that you can determine when service is restored.

### **ATTENTION BUILDING MANAGERS/BUSINESS SERVICE OFFICERS/FACILITY MANAGERS:**

If your facility receives ADVANCE notification from your utility of an impending outage at your location please send a message to [DGSEnergyInfo@dgs.ca.gov](mailto:DGSEnergyInfo@dgs.ca.gov) advising what you were told. Please include your name, your building name, your phone number and your location (street and city). Subject Line of your message should read OUTAGE PREDICTED.

If your facility experiences an actual outage, please send a message to [DGSEnergyInfo@dgs.ca.gov](mailto:DGSEnergyInfo@dgs.ca.gov) as soon as you can after the outage advising what happened. Please include your name, your building name, your phone number, your location (street and city), when the outage occurred and when power was restored. If an extraordinary event occurred, please describe the event and mitigation steps that should/will be taken. Subject line of your message should read OUTAGE OCCURRED.

### **GENERAL LEAVE POLICY**

The State's general policy during a declared Stage 3 Emergency will be to maintain normal work hours, including situations when management memos direct departments to reduce energy use by turning off certain office equipment and non-essential lights. However, the State's primary concern is safety, for the public as well as employees and their families. Therefore, the following circumstances should be accommodated.

Any employee whose dependent-care arrangements have been disrupted should be allowed to leave to deal with the situation. In addition, any employee who has reason to believe that the safety of family members and/or home security is jeopardized by a blackout should be allowed to leave for a reasonable period to deal with the situation. Employees should not be charged for such leave as long as it is taken in accord with this policy. Nothing in this policy is intended to reduce normal departmental discretion in these matters.

If it is determined that an urgent situation exists that poses a health and safety risk for employees to remain at work, a notice revising this general policy will be issued to Agency Secretaries, Department Directors, and Personnel Officers. Each agency/department will be responsible for advising its employees of the leave policy in effect.

If and when such notice is issued, departments should allow employees to leave for whatever time period is deemed necessary to ensure their safety, based on site-specific determinations by the individual facilities. These site-specific determinations should take into account whether employees will be able to move about safely, including exiting the facility, if there is a blackout affecting that facility.

Departments are encouraged to prepare a strategy for informing employees of the leave policy in effect during a blackout. This may include phone "trees" or recorded phone messages where employees may call for further information.

## **SAFETY TIPS AND WHAT TO DO DURING A BLACKOUT**

1. **Lighting:** All lights will go out except the emergency lighting system. This along with lighting from the windows should provide enough light to exit the building safely if necessary. At night, the emergency lighting system will allow safe exiting of the building. Aisles, exits and entrances are to be kept clear and obstructed to avoid tripping and falling. Building response team personnel on each floor should have flashlights available in case they are needed. DO NOT use candles for illumination; these are fire hazards. Use battery flashlights instead. Employees should consider keeping a flashlight in their workspace and in their vehicle.
2. **Elevators:** Avoid using elevators. Take the stairs instead. Generally, buildings higher than four floors have at least one elevator powered by an emergency generator, so it would be available in a power outage. Elevators that are not on emergency power would typically stop where they are when the power goes out. Passengers in elevators during a power outage should follow procedures posted in the elevator; emergency phones may be used to call for help. Do not try and climb out of the elevator!
3. **Emergency Evacuation Plan:** Employees should re-familiarize themselves with their emergency evacuation plan and make sure they know the location of their office's emergency evacuation Plan.
4. **Emergency Exits and Supplies:** Employees make sure they know where the emergency exits are located in their building and know the location of the first aid/emergency supply area.
5. **Persons with Disabilities:** If you have a disability and need special assistance to exit the building, notify your Emergency Floor Warden of your location so assistance may be provided.
6. **Parking Structures:** State agencies/departments and employees should verify with their parking provider how to enter and exit parking lots and garages during a blackout. Most parking facilities will not have emergency power. There are emergency exit lights to direct people to pedestrian exits. Employees should travel to parking structures in pairs.
7. **Communications:** Phone systems may not function, depending on the setup in the building and whether the outage is widespread. Agencies/departments should verify with their phone service provider how their phone system works during a power outage.
8. **Ventilation:** In a power outage, heating, ventilating, and air conditioning systems will shut down, and return when power is restored. Some computer rooms are powered by special equipment on a backup generator and will come back on when the generator starts. A lack of ventilation for the amount of time the power may be out should not pose a health or safety concern. Employees should keep a coat or sweater at their desks.
9. **Security:** Electronic locks will generally fail in the locked condition for entrances. Exiting from the building is always available. Cameras and alarm systems typically have battery backup and should continue to function.
10. **Access:** Automatic door openers may not function in all facilities during a blackout.
11. **Fire Alarm Systems:** These functions will not be interrupted, as these systems have battery backup and are on the emergency generator circuit, if there is one.
12. **Emergency Generator:** Generally, larger facilities have emergency generators for critical building support systems such as emergency lighting, elevators, fire sprinkler pumps, and fire-life safety systems. These generators will start automatically within moments of a power loss and assume the emergency loads. Typically, there is enough fuel for these systems to operate for at least eight hours.
13. **Plumbing:** Buildings with multiple floors have booster pumps on the city water system that may not function in a power outage. This would cause a loss of water pressure on upper floors. In such situations, employees and other building occupants are cautioned to limit use of the restrooms during a power outage.
14. **Travel:** Avoid unnecessary travel. Remember that traffic signals may go out of service, resulting in traffic jams and unusually hazardous situations.
15. **Leaving the workplace:** Do not leave the workplace without appropriate authorization from your supervisor. Follow the steps of your Emergency Response Plan. Although loss of electrical service may compromise State operations, it is expected that some functions can be continued, and personnel efforts should be directed towards these.

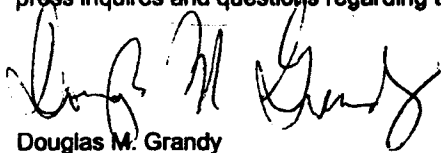
## **STATE ADMINISTRATIVE MANUAL**

### **IN THE EVENT OF A MORE EXTENDED OUTAGE**

It is anticipated that state personnel will have advanced notification of a Stage 3 so that appropriate measures can be taken to reduce load, protect personal safety, and protect state assets (including information technology assets and data). In the event of a more extended outage, which could result from storm damage to the system, earthquake or other contingencies, state personnel should follow the steps outlined in their agencies' Emergency Response Plan.

### **INQUIRIES AND FOR FURTHER INFORMATION:**

We hope that these recommendations will assist you. It is our goal that these proactive safety measures will ensure the safety of our employees and customers working in State buildings. You are encouraged to work closely with your building manager to ensure effective implementation of these measures. Please direct all press inquiries and questions regarding the situation to:




Douglas M. Grandy  
Energy Control Center  
Department of General Services  
(916) 323-8777 Voice  
(916) 869-6021 Cell Phone  
(916) 327-7316 Telefax  
mailto: [DGS\\_Energy\\_Info@dgs.ca.gov](mailto:DGS_Energy_Info@dgs.ca.gov)



State of California • Department of General Services • Gray Davis, Governor  
**OFFICE OF ENERGY ASSESSMENTS**  
717 K Street, Suite 409 • Sacramento, CA 95814 • (916) 323-8777

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TO: Steve Prey, CALTRANS  
FROM: Randy Ferguson, Energy Program Director   
DATE: April 26, 2001  
SUBJECT: Addendum to Management Memo 01-05 for CALTRANS and CALTRANS Customers

The following statement should have been included in Standard Operations/Stage 1 Procedures and carried through Stage 2 and Stage 3 Emergencies.

- Security and safety lighting shall be held to the lowest acceptable levels.  
Decorative lighting, inside and out, shall be switched off.

This addendum is effective immediately.

This correction will be reflected in future Management Memos issued. If you have any questions, please contact me at 916/445-6622. Thank you for bringing this to our attention.

## STATE ADMINISTRATIVE MANUAL

**MANAGEMENT MEMO**

SUBJECT:	NUMBER: 01-14
PROCUREMENT OF ENERGY EFFICIENT PRODUCTS	DATE ISSUED: 7/20/2001
REFERENCES: PUBLIC CONTRACT CODE SECTION 10307	EXPIRES: UNTIL RESCINDED/SUPERSEDED ISSUING AGENCY: DEPARTMENT OF GENERAL SERVICES

**Background**

California's current electrical energy crisis makes it imperative that state agencies purchase energy efficient products in order to conserve electrical power and natural gas, reduce peak power consumption, lower energy costs to state agencies, provide market leadership and support energy efficient purchasing by local jurisdictions, schools, and universities.

**The DGS Directive on Purchasing Energy Efficient Products**

The Federal Energy Management Program (FEMP) of the U.S. Department of Energy (DOE) publishes product efficiency recommendations for many energy-consuming products. These recommendations are available on the web for viewing and downloading at: <http://www.eren.doe.gov/femp/procurement/begin.html>. Currently, the FEMP has recommendations for the following product categories:

Office Technologies: Computers, Monitors, Printers, Copiers, and Fax Machines.

Lighting Technologies: Fluorescent Tube Lamps, Fluorescent Ballasts, Industrial HID Luminaires, Downlight Luminaires, Fluorescent Luminaires, Compact Fluorescent Lamps, and Exit Signs.

Commercial/Industrial Equipment and Appliances: Air or Water-Cooled Electric Chillers, Air Conditioners, Heat Pumps, Boilers, Ice Cube Machines, Clothes Washers, Motors, Distribution Transformers, Centrifugal Pumping Systems.

Construction Products: Residential Windows, Roof Products.

Residential Equipment and Appliances: Room Air Conditioners, Dishwashers, Refrigerators, Clothes Washers, Central Air Conditioners, Gas Furnaces, Electric Water Heaters, Gas Water Heaters, Air Source Heat Pumps.

Water Saving Technologies (which save energy used to pump, heat and treat water): Faucets, Showerheads, Toilets, and Urinals.

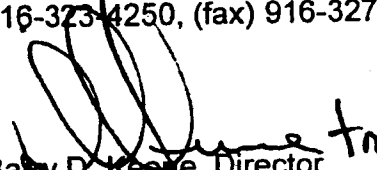
Where FEMP recommended standards are available, all state agencies shall purchase only those products that meet the recommended standards. All products displaying the Energy Star® label meet the FEMP standards. A

**purchase of an Energy Star® labeled product automatically complies with this directive.** The Energy Star® labeling program is a partnership between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE).

This directive applies to all purchases of energy consuming products, including those made using delegation authority, statewide contracts, multiple award schedules (CMAS), small business preferences, state price schedules, master agreements, Western States Contracting Alliance (WSCA) contracts and CAL-Card. For energy consuming products where there are no FEMP recommended standards, agencies shall purchase products that conserve electrical power and/or natural gas to the maximum extent possible.

Exceptions to this directive must be approved in writing by the Department of General Services Procurement Division's Sustainability Program Manager (see contact information below) prior to issuing a contract or purchase order.

The DGS Procurement Division's Sustainability Program Manager is Jim Byers. He is available to assist you with your energy consuming product purchases at (voice) 916-323-4250, (fax) 916-327-7195 or [Jim.Byers@dgs.ca.gov](mailto:Jim.Byers@dgs.ca.gov).

  
Barry D. Keene, Director  
Department of General Services



**MANAGEMENT MEMO**

SUBJECT: STATE AGENCY REQUIREMENTS REGARDING PREVENTIVE ENERGY MANAGEMENT	NUMBER: 01-16
	DATE ISSUED: AUGUST 1, 2001
REFERENCES: MANAGEMENT MEMO 01-05	EXPIRES: WHEN RESCINDED
	ISSUING AGENCY: DEPARTMENT OF INFORMATION TECHNOLOGY

**INTRODUCTION**

The State of California is facing an unprecedented period of electricity shortages. The Department of General Services is taking the lead role in alerting State agencies when immediate action is required to reduce electrical energy demand to reduce the likelihood of emergency actions such as rolling blackouts. Management Memo 01-05 lists demand reduction actions that State agencies are to take in the event of an energy emergency. This memo can be found at <http://www.dgs.ca.gov/energy>. When emergency notifications or updates are sent by DGS, they also include specific references to where departments can find information regarding steps to take to reduce energy use.

This memo addresses three procurement actions to be implemented by State agencies related to procurement and implementation of information technology (IT) hardware and software in order to provide reduced energy requirements and more effective power management capabilities on a long-term basis:

- (1) Purchase equipment that is sized to meet realistic business needs; i.e., do not purchase equipment with unnecessary additional capacity and corresponding additional energy consumption,
- (2) Purchase equipment that is Energy Star compliant, and
- (3) Purchase software that supports implementation and administration of power management features.

This Management Memo specifically focuses on LAN-based office computing equipment (computer, computer monitors, laser printers, inkjet printers, scanners, etc.) and any other standard "office technology" equipment (e.g., fax machines, copiers, etc.). However, these same principles apply in general to all IT-related purchases (servers, network devices, etc.)

**PURCHASE EQUIPMENT THAT MEETS REALISTIC BUSINESS NEEDS – Unneeded capacity usually translates into unnecessary energy consumption**

Organizations are sometimes inclined to purchase equipment with expandability or redundancy capabilities beyond what is realistically required for the intended use of the equipment. For example, mid-tower or full size desktop computer systems often have extra drive bays and motherboard bus slots (e.g., PCI) to allow the installation of additional disk drives, video cards, sounds cards, etc. Of course, these systems must have larger power supplies (e.g., 225 W) to accommodate the additional load that would be introduced if all drive bays and slots were populated. Due to the increasing levels of component integration, more and more "devices" are being integrated onto the computer motherboard, which provides fully adequate performance for standard office computing needs along with reduced power needs (e.g., 90 W power supply) due to the reduced use of separate components such as video cards, sounds cards, etc. For perhaps 90% to 95% of all

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desktop computer systems there is never the need to install additional disk drives or PCI or similar cards. Consequently, 90% to 95% of the computers purchased within organizations should be the Mini CPU-type system with power supplies of less than 100 W. Of course, the actual proportion of expandable (5%) and non-expandable (95%) systems in use or procured for use in an organization must be based upon the specific business needs for that organization.

This same caveat concerning sizing equipment to meet realistic business needs applies to the purchase of all IT-related equipment, including computers, monitors, printers, etc.: **Carefully assess your office IT equipment needs and purchase the level of processing capability and expandability needed to meet realistic business needs within the expected life of the equipment.**

Related to the issue of equipment capacity is the issue of shared versus dedicated equipment, or network-attached versus directly attached devices. The use of network-attached peripheral devices such as printers, scanners, etc., provides the immediate benefits of reduced energy consumption due to reduced amounts of equipment, and the long-term benefits of more effective management of technology through network-based technology management software. Except for those circumstances in which there are actual requirements related to security, equipment capability, or convenience that cannot be met with the use of network-attached and shared devices, **all devices such as printers, scanners, copiers, fax machines (e.g., fax servers), and multifunction devices should be purchased and implemented as network-attached, shared devices.**

In general, whenever there is the option of shared versus dedicated equipment, the use of shared equipment is preferred unless it fails to meet a specific and actual business need. An obvious example of "shared" equipment is the use of a KVM switch (Keyboard, Video, Mouse) to allow access to multiple servers via a single monitor-mouse-keyboard. For example, eight servers connected to an eight-port KVM switch with a single monitor-mouse-keyboard would eliminate the energy required to support seven (7) monitors, reducing overall energy use by the eight servers by approximately 50%.

### **PURCHASE EQUIPMENT THAT IS ENERGY STAR COMPLIANT**

Energy Star is a government/industry partnership designed to help businesses and consumers save money and protect the environment by selecting products from manufacturers who participate in this voluntary labeling program designed to identify and promote energy-efficient products. Energy Star was introduced by the U. S. Environmental Protection Agency (EPA) in 1992. In 1996, EPA partnered with the U. S. Department of Energy to promote the Energy Star label, with each agency taking responsibility for particular product categories. More recently, Energy Star has expanded to cover new homes, most of the building sector, residential heating and cooling equipment, major appliances, office equipment, lighting, consumer electronics, and more product areas.

The equipment of particular relevance for this Management Memo includes computers, monitors, printers, fax machines, copiers, scanners, and multifunction devices. Virtually all major manufacturers in each of these equipment categories offer Energy Star-compliant products. A primary feature of Energy Star-compliant products is the ability to automatically power down to a low energy "sleep" mode after some specified period of inactivity. This reduces the amount of energy consumed by the equipment. In some

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cases, Energy Star features offer additional benefits such as reduced "wear" (e.g., extends the life of scanner light sources). In all cases, the Energy Star features are designed to be compatible with the intended business use of the device (e.g., fax machines in "sleep" mode are immediately ready to respond to incoming fax calls; monitors in "sleep" mode take only about 10 seconds to "awaken", etc.).

More detailed information on the Energy Star program and listings of vendors providing Energy Star-compliant devices in each of these equipment categories can be found at <http://www.energystar.gov/>.

**Whenever there is an Energy Star-labeled device available in the equipment category for which purchases are anticipated, then State organizations shall specify and purchase Energy Star-labeled equipment.**

Per the current requirements for Energy Star 'labeling', equipment shipped by the vendor should have power management features implemented as the default. More importantly, **when a computer system is put into service on an end-user's desktop, the final software configuration of the computer system must have the relevant power management features activated.**

The table below provides some examples of energy usage by type and size of equipment, and the expected energy reductions during "sleep" mode operations. These are worthwhile guidelines for understanding which devices consume the most electrical power in a typical organization, and for determining potential benefits from the use of Energy Star-compliant equipment.

Device Type	Active Use (Watts)	Power-manage (Watts) <sup>1</sup>
Pentium Computer	45	25
Laptop Computer	15	3
15" Monitor CRT	75	5
20" Monitor CRT	120	5
15" Flat Panel LCD Display	35	5
Fax Machine	35	15
Inkjet Printer	15	5
Laser Printer	140	90

<sup>1</sup> Based upon values reported in the "User Guide to Power Management for PCs and Monitors", Bruce Nordman, Mary Ann Piette, Kris Kinney, Carrie Weber, Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, January 1997.

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### **PURCHASE SOFTWARE THAT SUPPORTS ENHANCED ADMINISTRATION AND IMPLEMENTATION OF POWER MANAGEMENT FEATURES**

Successful implementation of effective power management features requires the use of both hardware and software capable of supporting power management. To ensure that the State continues to improve the capability to manage electrical energy consumption by IT equipment, all installed software products must operate with and not negatively impact the hardware-based power management capabilities of IT equipment, where applicable.

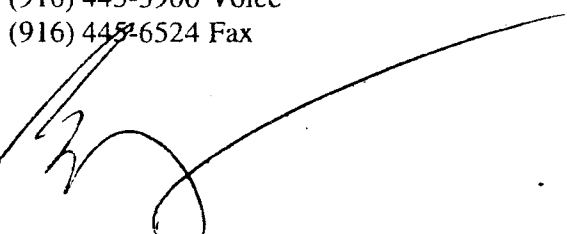
In order to more effectively monitor, control, and adjust the advanced power management configurations on individual desktop computer systems and other network-attached devices, automated network management toolsets should be purchased and implemented (if not already done) to allow centralized administration of the power management settings for network-attached devices (e.g., desktop computers, printers, etc.).

Information Technology managers within State organizations must have the capability to adjust power management features to meet the needs of reduced energy consumption, and to ensure that power management settings are not tampered with or made inactive. Ultimately, this must be accomplished through the use of automated toolsets; hand-configuring individual desktop computers is an important short-term strategy for enabling power management features, but it does not provide a long-term solution.

### **INQUIRIES AND FURTHER INFORMATION**

We hope that these recommendations will assist you in making procurement decisions that will maximize the potential for long-term energy reductions related to the use of IT equipment. Please direct all press inquiries and questions regarding this information to:

Department of Information Technology  
Attention: John Correia  
801 K Street, Suite 2100  
Sacramento, CA 95814  
(916) 445-5900 Voice  
(916) 445-6524 Fax



ELIAS S. CORTEZ  
Chief Information Officer/Director  
State of California/Department of Information Technology

## Memorandum

**To:** CHIEF DEPUTY DIRECTOR  
DEPUTY DIRECTORS  
DISTRICT DIRECTORS  
DIVISION CHIEFS  
PROGRAM MANAGER

**Date:** May 21, 2001

**File:**

**From:** DEPARTMENT OF TRANSPORTATION  
DIRECTOR'S OFFICE-MS49

**Subject:** Caltrans Energy Management Plan Rolling Blackout Plan

California will continue to face an unprecedented period of electrical shortages over the next several months. As you know, Governor Gray Davis has called upon each of us to do all that we can to conserve energy; and I am looking to the California Department of Transportation (Caltrans) to set the proper example.

To measure the impact of those efforts, the Governor's Office of Emergency Services (OES), the California Energy Commission (CEC), the Department of General Services (DGS) and the California Independent System Operator (CAISO) have developed an emergency load reduction test to measure energy conservation in public sector buildings.

The first test of Caltrans' conservation efforts is scheduled for Thursday, May 24, 2001 from 1:00 PM – 2:30 PM when a "MOCK Stage 3 Emergency Load Reduction Test" notice will be issued. The objective of the test will be to measure the amount of megawatts we can shed when asked to do so by the CAISO.

Because of the importance of this test, it is essential you and your staff fully implement the Stage 3 measures described in the Caltrans Energy Management Plan Protocol previously distributed and attached to this memo. Also attached to this memo is the recently completed Caltrans Energy Management Plan Rolling Blackout Plan, which provides clear direction of those actions to be taken in the event of a blackout.

If necessary, DGS will coordinate a second test on Tuesday, May 29, 2001. The second test is scheduled from 11:00 AM – 12:30 PM.

CHIEF DEPUTY DIRECTOR  
DEPUTY DIRECTORS  
DISTRICT DIRECTORS  
DIVISION CHIEFS  
PROGRAM MANAGER

May 21, 2001

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To answer any questions, and to ensure full cooperation during both tests, I have asked Steve Alston, Chief, Division of Business, Facilities, Asset Management and Security, to host a mandatory video conference on Wednesday, May 23 at 11:30 AM for you or your designated representative.

Each of the District and following Sacramento video conference rooms will be linked to the meeting: Director's Conference Room, HQ 1500, HQ 2101 and FMP.

**Original signed by Tony V. Harris  
for Jeff Morales**

JEFF MORALES  
Director

Attachments

c: District Deputy Directors, Administration



## CALTRANS ENERGY MANAGEMENT PLAN

### ROLLING BLACKOUT PLAN

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#### INTRODUCTION

The Caltrans Energy Management Plan, Rolling Blackout Plan (Plan) is the Department's strategy for dealing with short and long-term blackouts. The Plan complies with the Department of General Services' (DGS) Management Memo 01-05 issued April 19, 2001 entitled, "Comprehensive Energy Management in State Facilities During Electrical Emergencies," Caltrans Safety Manual and Caltrans Emergency Response Plan.

The first consideration of this Plan is the health and safety of Caltrans' employees, partners, customers and guests occupying Caltrans' facilities during a blackout. Pursuant to the Caltrans Energy Management Plan Protocol, a "primary and secondary Point of Contact must be appointed at every Caltrans occupied facility."

Caltrans' primary and secondary contacts shall register with DGS to receive notification from DGS Energy Info pursuant to Executive Order D-15-00. Caltrans' primary and secondary contacts will in turn alert personnel under their responsibility, as outlined in the Caltrans Energy Management Plan, by "forwarding information received from DGS/OEA in its entirety, without changes, to other staff within the Department."<sup>1</sup>

Each Point of Contact is to be equipped with a flashlight, spare batteries and portable radio for using during an extended blackout.

#### ROLLING BLACK OUT PLANS

Location of Employees During Outages: Each District and Program will assess where employees should or should not relocate if, due to a blackout, it is necessary to vacate the building. Generally, areas with the most natural light are best. It is Caltrans' policy that employees will remain at work.

Accessibility: Employees who have limited mobility will be ensured of their ability to safely move about or exit the building in the event of a blackout. During Stage 3 Energy Alerts, employees with limited mobility will be accommodated by temporarily relocating their assigned work areas to the first floor; or, at the discretion of their Supervisor, they may be permitted to telework.

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<sup>1</sup> MANAGEMENT MEMO, "Comprehensive Energy Management In State Facilities During Electrical Emergencies," No. 01-05, April 19, 2001.



Emergency Generators: Facility Managers will ensure that any backup emergency generators are tested and readily available to power critical functions of the building. In the case of battery-operated devices, batteries should be checked and fully charged; with diesel generators, tanks should be topped off and ongoing testing scheduled. Back-up radios will also be tested.

Electrical Outage Contact Lists: Deputy Directors, Program Managers, Division Chiefs and Facility Managers are responsible to ensure that their phone trees and contact lists are current and that a completed and continuously updated list of emergency contacts and people who regularly work after normal business hours is maintained and distributed, as appropriate.

Building Security: District and Statewide Security Operations personnel will coordinate with and ensure that the appropriate number of local law enforcement officials is readily available to assist, if necessary, during a rotating outage, when power is restored or to report on conditions and the safety of employees.

Electronic security systems are designed to default into the locked mode in the event of an electrical blackout.

Security personnel will ensure the following:

- Battery backup systems for access control, alarm and closed circuit monitoring systems are fully charged and functioning properly;
- Security guards are fully trained with Caltrans and local emergency plans and procedures;
- Security guards have working radios and flashlights with fully charged and backup batteries; and,
- Security guards will monitor and control entrances and will patrol halls, stairwells and lobbies to assist those in need to ensure that safety and security is maintained.

Electrical Outage Supplies: Safety Managers and Resource Managers will be responsible to ensure that appropriate electrical outage supplies are fully stocked and the room locations of those supplies are published and accessible to staff that require access. Recommended supplies include flashlights, batteries, battery-powered radios, drinking water and blankets. If these supplies are currently stocked, their expiration dates are to be checked.





Under no circumstances is staff to use open flames, i.e., candles, lanterns, matches, etc., to provide light in darkened areas. Flashlights are to be made available by supervisors to provide adequate light for safe exiting from the buildings.

#### Blackout Procedures

- Except for Information Technology (IT) equipment operating on uninterruptible power supplies (UPS), all other equipment still in service is to be turned off to avoid power surges when service is restored. A single task light is to remain turned on to act as a signal when power is restored.
- Facilities receiving ADVANCE notification from local utility companies of an impending outage will send a message to [DGSEnergyInfo@dgs.ca.gov](mailto:DGSEnergyInfo@dgs.ca.gov) advising the details of the notification. Subject line of the advisory to DGS will be OUTAGE PREDICTED and will include the following:
  - Details of utility notification;
  - Name, phone number and location of the Caltrans employee providing information to DGS;
  - Expected time and location of the predicted power outage.
- If a facility experiences an actual power outage, a message will be sent as soon as possible to [DGSEnergyInfo@dgs.ca.gov](mailto:DGSEnergyInfo@dgs.ca.gov) advising DGS of what occurred. Subject line of this message will be OUTAGE OCCURRED.

#### General Work Policy

All supervisors will identify all of their employees having mobility impairments to develop a mutually agreeable plan to ensure they will be able to safely move about or exit the building in the event of a blackout.

Employees will be asked to reorganize their workloads to perform computer-related tasks during early morning non-peak energy consumption hours. To the extent possible, employees should plan to do work that requires the use of energy consuming equipment (e.g. computers) in the mornings and other work in the afternoons both to reduce electrical loads during hot afternoons when blackouts are most likely to occur and to remain productive in case of blackout.



To ensure their protection and avoid a protracted extraction, Caltrans employees, customers, partners and the general public occupying a Caltrans facility during a Stage 3 Emergency will be advised not to use the elevators.

Caltrans' general policy during a declared Stage 3 Emergency and power outages of short duration is to maintain normal work hours. Caltrans' primary concern, however, is for the safety of its employees, customers, partners and general public while occupying a Caltrans facility. Caltrans' employees will not be asked to remain at a work site, which, as determined by Director or a duly designated manager, exposes employees to unhealthy and/or unsafe working conditions.

The following circumstances will be accommodated as indicated:

- Caltrans will allow employees to leave for an appropriate period of time as deemed necessary by the Director or a duly designated manager to ensure their safety, based on site-specific conditions. These site-specific conditions will take into account whether employees will be able to move about safely, including exiting the facility, in the event of a blackout, paying careful attention to stairwells and hallways that have no natural lighting. Additional conditions to be considered when determining whether or not to vacate a facility include the following:
  - Possible loss of fire suppression;
  - Lack of water resulting in inoperable restroom facilities; OR,
  - Interior temperatures exceeding 90 degrees Fahrenheit.
- Any employee whose dependent-care arrangements have been disrupted due to a power outage will be allowed to leave to deal with the situation.
- Any employee who has reasons to believe that the safety of his/her family members and/or home security is jeopardized by a power outage will be allowed to leave for a reasonable period to deal with the situation.
- Employees will not be charged for leave during a power outage as long as it is taken with advance authorization from his/her supervisor and in accordance with this policy. Released employees must be able to be contacted by telephone during the release hours or until the end of their normal working shift.
- Employees dismissed from their normal worksite due to power outages will be reminded to use extra caution when driving because of the likelihood of inoperable traffic signals.



In the event it becomes necessary to vacate a facility, employees will leave the building through the nearest exit or as advised by emergency response personnel. Employees are to use extreme caution when moving about or exiting a darkened building. During a building evacuation, employees are to walk and handrails should be used.

### Critical Services

Caltrans will maintain critical services during a blackout as described below:

- All Transportation Management Center (TMC) and dispatch centers are equipped with emergency backup power generators and, therefore, power outages will have minimal adverse effect on their operations. Each TMC is equipped with two-way radios and HAM operators. Each generator is checked and tested monthly or more often as circumstances dictate.
- Normal highway maintenance will continue during power blackouts. Some maintenance resources, however, may be diverted due to inoperable traffic signals.
- Critical transportation systems, i.e., tunnel lighting and ventilation, toll bridge operations and pump houses have backup emergency generators. Each of these generators is tested monthly. In the event of a failed backup system, Caltrans will respond to the site pursuant to the Caltrans Emergency Operations Plan and determine if traffic can safely proceed with minimal disruption.

The pre-existing emergency operations plans include duty rosters, reporting requirements through the dispatch and communications centers and plans to communicate with the Office of Emergency Services (OES) pursuant to the Statewide Emergency Management System (SEMS) requirements. Additionally, Caltrans has redundant communications channels using telephones, cell phones, the Internet, satellite telephones, radios and amateur radio operators.

- Procedures for emergency procurement of essential materials as outlined in the Caltrans Procurement Manual will be implemented in the event of an extended power blackout.

### Communications

District TMC and dispatch centers will implement normal emergency response plans and operations channels to maintain constant communications with the California Highway Patrol, police and sheriff departments, the news media, other state and local agencies, cities and county officials. Additionally, Caltrans will maintain the publicly accessible California Highway Information Network to notify local communities if state transportation systems are affected.



### Simulated Test

All emergency back up power generators are inspected and tested at least monthly to ensure proper operation. Several locations have already experienced short duration blackouts with minimal adverse impact.

All locations will simulate a blackout and implement the Rolling Blackout Plan by June 15, 2001. Each site will evaluate the effectiveness of the plan and report their findings to the Chief, Division of Business, Facilities, Asset Management and Security who will in turn report to the Caltrans Directorate.



## **CALTRANS ENERGY MANAGEMENT PLAN PROTOCOL**

The Caltrans Energy Management Plan Protocol challenge and commitment is:

***Maintain Employee Safety  
Maintain Employee Morale  
Maintain Employee Awareness  
Maintain A Proactive Energy Saving Program.***

Caltrans' protocol is based upon Governor Davis' Executive Orders D-14-00, D-15-00 and D-16-00 as well as State Administrative Manual Management Memos 00-06, 00-13 and 01-01. It identifies the need for contact person(s) in every Caltrans facility. The protocol also defines every employee's responsibility during each energy alert stage.

- A primary and secondary **Point of Contact** must be appointed at every Caltrans occupied facility. They will be responsible for obtaining and disseminating timely and accurate energy related information including Department of General Services (DGS) issued Energy Alerts, Advisories and recommended energy saving actions to all Caltrans employees within the assigned facility.
  - Both contacts are to register at [DGSEnergyInfo@dgs.ca.gov](mailto:DGSEnergyInfo@dgs.ca.gov) in order to receive current Energy Alerts and Advisories.
- **Stage One Alert** exists when electrical operating reserves are projected to fall below 7%. Effective immediately, Caltrans adopts the following responsible energy habits as standard operating practices:
  - All video monitors, personal computers, printers and copiers shall be set for automatic power-down (sleep) mode after five minutes of non-operation.
  - All non-essential personal computers, printers, copiers and other electrical equipment shall be turned off outside of normal business hours and when not in use unless there is an essential need for after-hours operation.
  - Use of copiers, printers and fax machines shall be consolidated. Where possible, redundant equipment shall be turned off and work shall be redirected to nearby machines. Major copy and print jobs over twenty pages shall be deferred, where possible, to off-peak demand periods. Peak energy demand hours are 5:00AM to 9:00 AM and 4:00 PM to 7:00 PM.
  - All lights are to be turned off in unoccupied rooms at all times.

- **Stage Two Alert** exists when electrical operating reserves are projected to fall below 5%. In addition to those measures taken during a Stage One Alert the following actions are to be taken:
  - During a DGS declared Stage Two or Stage Three Alert normal work shifts are to be maintained, but managers are to take special interest to reduce energy use, especially during peak energy demand hours of 5:00 AM to 9:00 AM and between the hours of 4:00 PM to 7:00 PM. Keeping staff beyond their normal work shifts, especially on overtime after 4:00 PM is to be limited to activities critical to public safety, meeting important deadlines or preserving crucial public services.
  - Interior air shall not be cooled below 78, nor heated above 70, degrees Fahrenheit. Doors and windows shall be kept closed to prevent loss of conditioned air.
  - Portable electric devices, i.e., radios, heaters, fans, water coolers, etc. shall not be used during a Stage Two or Stage Three Alert. Note: do not turn off refrigerators in employee break rooms and cafeterias.
  - Custodial personnel shall be instructed to turn on lights only as needed within a restricted area to conduct their work. Where possible, custodial personnel shall work in teams to complete cleaning on each floor of multi-story buildings before turning on lights on another floor.
  
- **Stage Three Alert** exists when electrical operating reserves are projected to fall below 1.5%. Rolling power outages of limited duration and service interruptions are possible impacting any facility. In addition to those measures taken during a Stage Two Alert the following actions are to be taken:
  - Shut down everything that is not critical to maintain basic business operations. These measures include, but are not limited to the following:
    - All non-critical personal computers, monitors, printers, scanners, copiers and peripheral equipment that is not absolutely essential to fulfilling Departmental commitments. If critical, then turn off when not in use.
    - Each work place should keep one computer on to receive critical communications. This computer address should be placed on Caltrans' Emergency Operations Plan contact list. Perform critical e-mail work in the "Save Draft" mode to ensure information is saved in the event of a power outage. Decrease the rate of computer "Auto Save" function to every ten minutes.
    - All non-essential computer systems must be turned off after saving critical data.
    - Reduce all lighting loads in work areas to minimum acceptable levels consistent with personal safety and security. Use task lighting where possible.

- Unless otherwise directed by DGS or Caltrans' Directorate, employees are not to be dismissed from their workplace during normal business hours. If the Stage Three Alert places employees in an unsafe situation as determined by local management, after conferring with Caltrans' Directorate, employees shall be dismissed.
  - Avoid using elevators.
  - Do not use candles.
  - Do not use overhead magnetic lifting devices.
  - Ensure all walkways and corridors are free from obstructions and tripping hazards.
- In the event of a **Rolling Blackout** the following additional steps are to be implemented immediately:
    - Turn off all remaining equipment, except IT equipment operating on its own uninterruptible power supply, in order to avoid power surges when service is restored.
    - Primary and secondary Points of Contact are to leave their computers on in order to receive current and accurate information and energy status reports from DGS. Contracts' computer addresses should be included on Caltrans' Emergency Operations Plan contact list.
    - Leave a single task light on in order to determine when service is restored.
    - If trapped in an elevator during a rolling blackout remain calm as the blackout is of limited duration. Do not try to climb out of the elevator!

You may direct any questions about this Energy Protocol to the Office of Business, Facilities, Asset Management and Security at (916) 263-4226 or Calnet 435-4226. Please direct questions about how to configure power settings on computers to your local PC support.

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# Executive Order

EXECUTIVE DEPARTMENT

STATE OF CALIFORNIA

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**EXECUTIVE ORDER S-5-04**  
**by the**  
**Governor of the State of California**

WHEREAS, the people of California have spoken and made clear their desire for a government that is a better provider of services, more responsive and more accountable; and

WHEREAS, the fiscal crisis confronting California demands fundamental change in the way the state does business, eliminating old, failed approaches and creating new and better ways to serve the people of the state; and

WHEREAS, California state government must become the first true 21st Century government in America, a government that is as innovative, efficient and dynamic as the state itself; and

WHEREAS, the State of California is filled with skilled and dedicated government employees, innovative companies, educational institutions and non-profit institutions with substantial experience and knowledge necessary to improve the operations and accountability of state government; and

WHEREAS, California needs a mechanism to rigorously examine how the government operates and the system it employs to accomplish its mission, focusing on the prioritization of program needs, return on program investment, effective program management, and effective, accountable fiscal management of the state's resources; and

WHEREAS, California's government structure has become too cumbersome to meet current service demands. California has agencies, boards and commissions with overlapping and related responsibilities which can be consolidated to make government more efficient, effective and transparent; and

WHEREAS, California has outmoded and duplicative information technology systems that must be replaced with a common set of statewide systems to bring government operations into the 21st century.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power and authority vested in me by the Constitution and statutes of the State of California, do hereby issue this Executive Order to become effective immediately:

1. There shall be created the California Performance Review to conduct a focused examination of California state government. Based on this examination and assessment, the Performance Review will formulate and recommend practical changes to government agencies, programs and operations to reduce total costs of government operations, increase productivity, improve services and make government more responsive and accountable to the public.

2. This year, the Performance Review will examine the following areas: (1) Statewide Information Technology; (2) Performance-Based Budgeting and Revenue Maximization; (3) Personnel Management; (4) Acquisition and Procurement; (5) Customer Service; (6) Health and Human Services; (7) Education, Training and Volunteerism; (8) Public Safety; (9) Infrastructure (including transportation, housing, energy and water); (10) Resources and Environmental Protection; (11) California Business Climate; (12) General Government (including agency reorganization and consolidation); (13) Intergovernmental Relations; and (14) Job Retention and Business Development.

3. The Department of General Services will provide office space and other administrative support services as are reasonably necessary for the Performance Review to fulfill its mission. The Performance Review shall be deemed to be a "proceeding" pursuant to Government Code section 14600 and shall be conducted as an adjunct activity of the Department of General Services. The Department of Finance shall provide assistance in making necessary resources available to the Performance



Review and the Department of General Services.

4. Review staff members will be selected from within agencies and departments in state government for temporary service in the California Performance Review. They shall serve the Performance Review on loan from contributing agencies/departments which shall provide continued payment of employees' salaries while they are participating in the project.

5. The Performance Review will make its final recommendations to the Governor not later than June 30, 2004.

6. There shall be created a California Performance Review Commission that shall exist for the duration of the Performance Review to provide independent guidance and input. The Commission will be led by co-chairs and shall consist of members selected by the Governor, all of whom shall serve voluntarily and without compensation. The Commission shall conduct such public meetings and shall take such public testimony as necessary to assist the Performance Review. The Department of General Services shall provide staff support and shall bear incidental costs associated with the Commission's public meetings.

7. All state entities under the Governor's executive authority shall cooperate fully with the Performance Review and provide assistance and personnel as needed to implement this Executive Order. The provisions of this Executive Order shall not apply to the legislative and judicial branches of government, nor shall it apply to the constitutional officers of this state. However, I invite these branches of government and the constitutional officers to lend their assistance and support.

IT IS FURTHER ORDERED that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this order.



**IN WITNESS WHEREOF** I have here unto set my hand and caused the Great Seal of the State of California to be affixed this the tenth day of February 2004.

/s/ Arnold Schwarzenegger

Governor of California